...5 1929

VOL. 56 APRIL, 1929 NO. 4

BULLETIN
OF THE
TORREY BOTANICAL CLUB

Editor
TRACY ELLIOT HAZEN

Associate Editors
Albert Francis Blakeslee — Caroline Dorcy Hastings
Cornelia Lee Carey — Mary Avery Howe
Frank Earl Denny — Lon Frank Kunkel
Alexander William Evans — Ruth Irwine
Henry Allan Gleason — Agnes Arabella Stout
Alfred Gundersen — Mary E. Wilcox

CONTENTS

A study of the genus Clarkia, with ... to its relationship to Godetia..... PHILIP A. MUNZ and ROBERT E. HITCHCOCK

Notes on the marine algae of Florida.... JOSEPH TAYLOR

Acanthus mollissimus Greene (Gray) O.... WILLIAM A. DAYTON

Type of the genus Jatropha..... EDGAR T. MACKENZIE

INDEX TO AMERICAN BOTANICAL LITERATURE.....

PUBLISHED FOR THE CLUB MONTHLY
EXCEPT JULY, AUGUST AND SEPTEMBER

GEORGE BANTA PUBLISHING COMPANY
MENASHA, WISCONSIN

SUBSCRIPTION PRICE $5.00 A YEAR

Entered as Second Class Matter at the Post Office at Menasha, Wisconsin.

TORREYA

A bimonthly journal of botany

Articles on the local flora, non-technical accounts of common plants of all groups, botanical notes, book reviews, etc.

Published by the Torrey Botanical Club at $1.00 a year. Address the treasurer,

MRS. HELEN M. TRELEASE
Box 42, Schermerhorn Hall, Columbia University, New York City

American Fern Journal

An illustrated quarterly devoted to the general study of ferns. Subscription, with membership in the AMERICAN FERN SOCIETY, 1.50 per annum; without membership, $1.25; to foreign subscribers, $1.35; life membership in the Society, $25.00. Volume I, six numbers, $1.00; other volumes, $1.25 each. Matter for publication should be sent to E. C. BENEDICT, 522 East 19th Street, Brooklyn, N. Y.; subscriptions and other business communications to E. J. WINSLOW, Auburndale, Mass.

THE BRYOLOGIST

PUBLISHED BY THE

SULLIVANT MOSS SOCIETY

The only magazine in English devoted wholly to Mosses, Hepatics, and Lichens. Bi-monthly; amply illustrated; for beginners as well as for advanced students. Yearly subscriptions, $1.25. Address

A. TENNYSON BEALS, 2929 BROADWAY, NEW YORK CITY

BIOLOGY SUPPLIES

Dissecting Instruments
Microscopes and Accessories
Models and Charts
Laboratory Glassware
Chemicals and Stains
Microscope and Lantern Slides
Naturalists' Supplies
Skeletons

Catalogues applying to any of these articles in which you are interested will be sent on request.

NEW YORK BIOLOGICAL SUPPLY CO.
General Supplies for the Biological Sciences
34 UNION SQUARE NEW YORK CITY

Please mention the BULLETIN *when answering advertisements*

A study of the genus Clarkia, with special reference to its relationship to Godetia

PHILIP A. MUNZ AND C. LEO HITCHCOCK

During the past two years the junior author has been working under the direction of the senior on a revision of *Godetia*. During the progress of his study it was soon realized that a proper understanding of *Godetia* involved also the closely related *Clarkia*, especially so, since the latter name has priority and, if the two groups are congeneric, *Godetia* must be reduced. The present paper is written largely to discuss this situation. It is proposed to maintain *Godetia* as a genus, the North American species of which will be taken up in a separate paper by the junior author. In the present paper *Clarkia* is treated.

In carrying on the study here reported we have had available, material from:

Gray Herbarium of Harvard University (G),
Pomona College Herbarium (P).

The abbreviations indicated above are used in citing specimens. To Dr. B. L. Robinson and Dr. I. M. Johnston of the Gray Herbarium we hereby acknowledge our indebtedness and our appreciation of the many favors rendered. To Dr. W. L. Jepson of the University of California we are greatly obliged for the loan of the type of *Clarkia modesta* from his private herbarium.

HISTORY

The first species of *Clarkia* was published by Pursh, Fl. Am. Sept. 1: 260. *pl. 11.* 1814, as *C. pulchella*, being based on a collection by M. Lewis from the Kooskoosky and Clark's rivers, opposite the present town of Kamiah, Idaho. The generic name *Clarkia* was given in honor of Clark of the Lewis and Clark expedition. The next species was made known by Douglas in Lindl., Bot. Reg. **19**: *pl. 1575.* 1833; this was *C. elegans*. Later followed *C. rhomboidea* Dougl., in Hook., Fl. Bor. Am. 1: 214. 1834, and other species.

[THE BULLETIN FOR MARCH (56:123–180) WAS ISSUED 8 MAY 1929.]

Table 1. *Comparison of Eucharkia, Eucharidium, Phaeostoma, and Godetia*

NAME	LENGTH OF HYPANTHIUM	INTERIOR OF HYPANTHIUM	PETALS	STAMENS	ANTHERS	SEED
C. pulchella (EUCLARKIA)	2–3 mm.	no band of hair, some hair at base of filaments	lobed, the blade 2–3 times claw	8, unequal, epipetalous not functional	glabrate to ciliate, coiling	cellular-pubescent, crest minute
C. Xantiana (EUCLARKIA)	2–4 mm.	band in upper part, no hair on fils.	lobed, the blade 2–4 times claw	8, unequal, epipet. functional	ciliate, coiling	cellular-pubescent, little or no crest
C. concinna (EUCHARIDIUM)	15–25 mm., filiform	no band, no hair on filaments	lobed, the blade twice the claw	4; epipetalous gone	ciliate-villous, coiling	not cellular-pubes., transverse corrugated; long crest
C. Breweri (EUCHARIDIUM)	25–30 mm., filiform	no band nor hair on filaments	lobed, blade 5–6 times the claw	4, clavate; epipetalous gone	ciliate-villous, do not coil	as in *concinna*
C. rhomboidea (PHAEOSTOMA)	1–3 mm.	no band, hairy scales base of fils.	not lobed, blade 2–4 times the claw	8, unequal, all functional	glabrate, not coiling	cellular-pubes., scarcely crested
C. elegans (PHAEOSTOMA)	2–4 mm.	narrow band, & hair on dilated base epipet. fils.	not lobed, blade equaling claw	8, unequal, all functional	glabrate, scarcely coiling	cellular-pubes., scarcely crested
C. delicata (PHAEOSTOMA)	1–3 mm.	band in upper half, no scales or hairs on fils.	not lobed, blade 2–3 times claw	8, unequal, all functional	glabrate, not coiled	cellular-pubes., scarcely crested
GODETIA	1–15 mm., not filiform	narrow ring in lower or upper half, no scales	not lobed except in *G. biloba;* blade at least 10 times as long as claw	8, subequal to unequal, all functional	glabrate, not coiled	smooth except cellpubes. in *epilobioides, hispidula,* and *Whitneyi;* crest, except in *epilobioides*

Eucharidium was proposed as a genus by Fischer and Meyer, Ind. Sem. Hort. Petrop. **2**: 37. 1835, when they published *E. concinnum*. They described also *E. grandiflorum*, Ind. Sem. Hort. Petrop. **7**: 48. 1840. *E. Breweri* was described by Gray, Proc. Am. Acad. **6**: 532. 1865.

The genus *Phaeostoma* was created by Spach, Nouv. Ann. Mus. Paris III. **4**: 395. 1835, and under *P. elegans* were included *Clarkia elegans* and *C. rhomboidea*.

Seringe, in D. C., Prodr. **3**: 52. 1829, recognized *Clarkia* as a genus, and listed the only species known to that time, *C. pulchella*. Hooker, Fl. Bor. Am. **1**: 214. 1834, included also *C. rhomboidea*. Spach l. c., restricted *Clarkia* to *C. pulchella*. Torrey and Gray, Fl. N. Am. **1**: 515–6. 1840, recognized *Clarkia* and *Eucharidium* as genera, listing under the former: *C. pulchella*, *C. elegans*, *C. rhomboidea*, and *C. unguiculata;* and under the latter: *E. concinum*. By them *Godetia* was included in *Oenothera*. Walpers, Repert. **2**: 89–90. 1843, followed them in his generic concepts. Watson, Proc. Am. Acad. **8**: 596–600. 1873, also included *Godetia* in *Oenothera*, but in 1876, in Bot. Calif. **1**: 228–231, he recognized as genera: *Godetia*, *Eucharidium* and *Clarkia*. This was also the disposition by Raimann in Engler & Prantl, Nat. Pflanzenfam. **3**[7]: 212. 1893, *Phaeostoma* in both cases beng included in *Clarkia*. Leveille, Monog. Onoth. 286–289. 1908, included all in *Oenothera*, and without any proper species concept. In 1911 Nelson, Bot. Gaz. **52**: 267, revived the use of *Phaeostoma*, placing therein not only *P. elegans* and *P. rhomboidea*, but also *P. Xantiana*. Rydberg, Fl. Rocky Mts. 593. 1917, also recognized *Phaeostoma*. In 1918, Nelson and Macbride, Bot. Gaz. **65**: 59–65, combined *Godetia*, *Phaeostoma*, *Eucharidium*, and the old *Clarkia* in one genus *Clarkia*, and created the new combinations necessary for many of the species. For the most part, however, the recent western manuals, such as those by Greene, Howell, Piper, and Jepson, have used two genera: *Clarkia* to include *Phaeostoma* and *Eucharidium*, and *Godetia* as the second.

DISCUSSION OF GENERIC STATUS

In the present discussion we are concerned with the four names mentioned in the previous paragraphs: *Clarkia* proper,

which for the purpose of clarity, we shall here refer to as Euclarkia, in which we include the species *C. pulchella* and *C. Xantiana;* Eucharidium, in which we recognize as species, *C. concinna* and *C. Breweri;* Phaeostoma, with *C. rhomboidea*, *C. delicata*, and *C. elegans;* and *Godetia*, with *G. biloba*, *G. epilobiodes*, etc. The whole situation can perhaps be made most clear by a study of table 1.

It can readily be seen that characters do not vary together:

(1) Eucharidium, Euclarkia, and Phaeostoma agree in having the claws from one-fifth to one-half as long as the petals, the filaments and anthers usually quite unequal, the hair within the hypanthium lacking, or forming usually a fairly broad band. *Godetia* has claws less than one-tenth as long as the petals, the hair a narrow ring in the hypanthium, and the stamens subequal except in *G. epilobioides* and *G. purpurea*.

(2) Eucharidium and Euclarkia agree in their prominently lobed petals, irregular corollas, epipetalous stamens greatly reduced or quite aborted, and anthers usually hairy and coiling after dehiscence.

(3) Eucharidium stands apart in its long filiform hypanthium, entire suppression of epipetalous stamens, long crest and transverse corrugations on the seeds.

(4) Euclarkia and Phaeostoma agree in the short hypanthium, the eight stamens, cellular pubescence and minute cresting on the seeds.

(5) Phaeostoma and *Godetia* have little or no lobing, (except in *G. biloba*), epipetalous stamens functional, and anthers glabrate and not greatly coiled.

So far as we can see, these four groups represent three phylogenetic levels; the most primitive is *Godetia*, with little or no claws to the petals. It is most nearly related to *Oenothera* and has been included there by the earlier writers. The middle level is represented by Phaeostoma and Euclarkia, having the seeds of *Godetia* and the short hypanthium, but representing two lines of descent, Phaeostoma related to *Godetia epilobioides*, and Euclarkia to *G. biloba*. The upper level has Eucharidium, with its long filiform calyx-tube and crested corrugated seeds; it is evidently related to Euclarkia and continues certain tendencies there established, namely,

irregular corolla, lobed petals, and suppression of the epipetalous stamens.

With these phylogenetic levels in mind let us consider the various possibilities as to generic recognition:

(1) To recognize all four as genera. In so doing we get very much the same situation as has prevailed in *Oenothera*, of having a large number of none too distinct segregates with intergradation in so many directions as to make great confusion. In Phaeostoma, *C. delicata* and *C. rhomboidea* are near *Godetia epilobioides; Clarkia pulchella* and especially *C. Xantiana* are near *Godetia biloba;* and *C. pulchella* approaches Eucharidium.

(2) To combine Phaeostoma and Euclarkia in *Clarkia*, recognizing as other genera *Eucharidium* and *Godetia*. In many respects this arrangement is unsatisfactory, since Eucharidium and Euclarkia are evidently related, and since Phaeostoma and Euclarkia represent two distinct lines of descent.

(3) To merge all four in one genus *Clarkia*, perhaps the most consistent procedure taxonomically, but one that upsets a nomenclature well established in horticulture, since it requires giving up the name *Godetia*. After all, on the basis of clawed petals two groups can easily be distinguished.

(4) To combine Euclarkia, Eucharidium, and *Godetia biloba* in the genus *Clarkia* on the basis of prominently lobed petals, although *G. biloba* has a regular corolla and the others irregular ones; and to include Phaeostoma in *Godetia*, since both have quite entire petals. This arrangement seems quite artificial, separating *G. biloba* from its evident relative *G. Dudleyana*, and putting into *Godetia Clarkia elegans* with its highly specialized petals. Moreover this does away with the possibility of using a very characteristic feature, the narrow band of hair in *Godetia*, which breaks up in the others into various forms.

(5) To recognize two genera *Clarkia* and *Godetia*, placing the division between *C. rhomboidea* and *C. delicata* on the one hand, and *G. epilobioides* on the other, *C. Xantiana* and *C. pulchella* on the one and *G. biloba* on the other. These species might be variously transposed, but on the basis of claw-length, ring of hairs in the *Godetia* hypanthium, as contrasted with a band, total lack, or hairs about the base of filaments in *Clarkia*, and on the basis of stamen development, the line of division between the two genera seems best so. We there-

fore propose following Jepson, Man. Calif. 672–9. 1925, among recent authors, keeping up the name *Godetia* in the sense in which it has become so thoroughly established by usage. It is, therefore, largely on the basis of expediency and tradition, that we adopt this method, since other arguments for and against seem to us almost equally weighty.

Clarkia

Clarkia, as a genus, Pursh, Fl. Am. Sept. **1**: 260. *pl. 11.* 1814; Seringe, in DC. Prodr. **3**: 52. 1829; Hooker, Fl. Bor. Am. **1**: 214. 1834; Spach, Hist. Veg. Phan. **4**: 392. 1835; T. & G. Fl. N. Am. **1**: 515. 1840; Walpers, Repert, **2**: 89. 1843; Benth. & Hook. Gen. Pl. **1**: 789. 1847; Raimann, in Engler & Prantl, Nat. Pflanzenfam. **3**[7]: 213. 1898; Jepson, Fl. W. Mid. Calif. 277. 1911. (All references to this point do not include Eucharidium.) Greene, Pittonia **1**: 140. 1887· Greene, Fl. Franciscana 223. 1891; Greene, Man. Bot. San Fran. Bay 136. 1894; Jepson, Fl. W. Mid. Calif. 331–332. 1901; Jepson, Man. Fl. Pl. Calif. 672. 1925. (This second group of references does include Eucharidium, as well as Phaeostoma.) *Clarkia*, included in *Oenothera*, Leveille, Monog. Onoth. 286. 1908. *Euclarkia*, subgenus, Jepson, Fl. W. Mid. Calif. 331. 1901. *Phaeostoma*, as genus, Spach, Hist. Veg. Phan. **4**: 392. 1835; A. Nelson, Bot. Gaz. **52**: 267. 1911; as a subdivision, rank not stated, Endlicher, Gen. Pl. 1192. 1840. *Opsianthes*, as genus, Lilja, Fl. Sverig. Suppl. 25. 1840. *Eucharidium*, as genus, Fisch. & Meyer, Ind. Sem. Hort. Petrop. **2**: 36. 1835; T. & G. Fl. N. Am. **1**: 516; Benth. & Hook. Gen. Pl. **1**: 790; Engler & Prantl, l.c.; as subgenus, Jepson, l.c. *Clarkia*, including all these groups and *Godetia*, Nelson & Macbride, Bot. Gaz. **65**: 59. 1918.

Annual herbs, simple or branched above, with spicate inflorescence and nodding or reflexed buds. Hypanthium short or greatly elongated; calyx-lobes distinct or united in anthesis. Petals distinctly unguiculate, claws at least one-sixth as long as blades; blades simple or lobed, pink to lavender or purplish. Stamens 4 and alternate with the petals, or 8, with the epipetalous ones shorter than the alternate and sometimes not functional. Anthers linear, fixed near the base. Stigma four-lobed, the lobes lance-linear to suborbicular. Capsule linear or attenuate above, 4-celled, usually 4-angled (at least when dried).

Seeds in one row in each cell, cellular-pubescent and with the cresting reduced, or not pubescent but with minute transverse corrugations and with conspicuous cresting.

Type species, *Clarkia pulchella* Pursh.

KEY TO SPECIES

Blade of petal lobed; corolla slightly irregular; anthers usually ciliate-villous.

Hypanthium 15–30 mm. long; stamens 4; seeds not cellular-pubescent, but transversely corrugated, and with conspicuous cresting. (Subgenus Eucharidium (F. & M.) Jeps.)

Filaments club-shaped toward tips; anthers not coiling after dehiscence; middle lobe of petal much narrower than lateral ones; stigma lobes lance-linear, 3 mm. long.....7. *C. Breweri*

Filaments flattened but not club-shaped; anthers coiling after dehiscence; middle lobe of petals at least as wide as lateral ones; stigma lobes rounded, ca. 1 mm. long.....6. *C. concinna*

Hypanthium 2–4 mm. long; stamens 8; seeds cellular-pubescent, minutely crested.....(Subgenus Euclarkia Jeps.)

Petals bilobed with subulate tooth at base of sinus; short stamens functional; hypanthium with ring of hairs within. California, from Kern County to Los Angeles Co.....4. *C. Xantiana*

Petals 3-lobed, lobes about equal; shorter stamens not functional; hypanthium without ring of hairs within. British Columbia to Montana and Oregon.....5. *C. pulchella*

Blade of petal not lobed, although occasionally with small teeth on the claw; corolla regular; hypanthium 1–4 mm. long; stamens 8, anthers glabrate; seeds cellular pubescent, scarcely crested (Subgenus Phaeostoma.)[1]

Hypanthium without band of hairs or scales within; anthers curling slightly after dehiscence; blade of petal about as long as claw, the latter very slender. Mostly from coastal California, the length of the state.....3. *C. elegans*

Hypanthium with band of hairs within or with scales at summit; anthers not curling after dehiscence; blade of petal 2–4 times the length of the rather broad claw.

Calyx-lobes distinct in anthesis; scales present at base of filaments; capsule pedicelled; petals purplish. California, mostly from the interior, east to Arizona and Utah, and north through interior Oregon and Washington.....2. *C. rhomboidea*

Calyx-lobes united in anthesis; no scales on filaments, but band of hairs within the hypanthium; capsule nearly sessile; petals pinkish. E. San Diego Co., California.....1. *C. delicata*

[1] **Phaeostoma** (Spach) Munz & Hitchcock, n. subgenus. *Phaeostoma*, as genus, Spach, Hist. Veg. Phan. **4**: 392. 1835.

TREATMENT OF SPECIES

1. CLARKIA DELICATA (Abrams) Nels. & Macbr. Bot. Gaz. **65**: 60. 1918.—*Godetia delicata* Abrams, Bull. Torrey Club **32**: 539. 1905; Jepson, Univ. Calif. Pub. Bot. **2**: 352. 1907.

Simple to sparingly branched from the middle; stems 3–5 dm. tall, nearly glabrous; leaf-blades narrowly to broadly lanceolate, remotely to rather sharply denticulate, 2–5 cm. long, 0.3–1 cm. wide, acute to blunt, borne on very slender petioles 5–15 mm. long; flowers in long loose spike; inflorescence strigillose; buds nodding, obovoid, 5–10 mm. long; hypanthium 1–3 mm. long, with a band of hairs on upper half of inner surface; calyx-lobes united in anthesis, green or tinged reddish; petals spatulate, 1–1.5 cm. long, 5–7 mm. broad, the blade rose-pink, 2–3 times as long as the rather slender whitish claw; stamens 8, in two unequal sets; filaments filiform, the shorter epipetalous ones varying from three-fifths to nearly as long as longer ones; longer ones about half as long as petals; anthers glabrate, those of longer set reddish, 4–6 mm. long, tips very slightly recurved after dehiscence, shorter ones 2–4 mm. long, whitish, recurved after dehiscence; style equaling longer filaments; stigma-lobes rounded, 1–1.5 mm. long, equally broad, whitish; capsule 1.5–2.5 cm. long, 1.5–2.5 mm. thick, somewhat 4-angled when dry, nearly sessile, slightly beaked; seeds brown, cellular-pubescent, oblique-prismatic, 0.75 mm. long, not evidently crested.

Type locality, between Campo and Potrero, San Diego Co., California. Material seen,—CALIFORNIA, San Diego Co.: shady slope between Campo and Potrero, *Abrams 3710*, type coll. (C,[2] P, Stanford); San Felipe Creek, *Keck and McCully 104*, in 1925 (P); Barrett Dam, *Munz* 8020 (P); Descanso *T. S. Brandegee, May 24, 1906* (C), *K. Brandegee, June 19, 1906* (C); top of grade, Descanso, *K. Brandegee* in 1906 (C); Ramona Ranch, *T. S. Brandegee* in 1906 (C); Potrero Grade, *Munz 9496a* in 1925 (P). Originally described under *Godetia*, this species quite breaks down any technical or adequate distinction between *Clarkia* and *Godetia*, but the spatulate character of the petals, the distinctness of the two sets of stamens, and the length of the claw are characters appertaining to *Clarkia*. Unpublished notes left by Mrs. Brandegee suggest concerning this plant: 'It has the appearance of a hybrid *Cl. rhomboidea*?

[2] C, abbreviation for University of California Herbarium, this material having come in a loan of *Godetia*.

× *G. epilobioides* and is in appearance nearer the latter.' To our wayof thinking, it is a distinct species of rather local but natural range. We feel that enough collections have been made and over a period of enough years and from enough territory to preclude the possibility of its being a hybrid, especially since the characters exhibited are quite consistent. It is no doubt closely related to *Godetia epilobioides*, and represents probably an evolutionary step toward the more highly specialized Clarkias.

2. CLARKIA RHOMBOIDEA Dougl., in Hook. Fl. Bor. Am. **1**: 214. 1834.—*C.rhomboidea* in T. & G. Fl. N. Am. **1**: 516. 1840; Nels. & Macbr. Bot. Gaz. **65**: 63. 1918. *Phaeostoma rhomboidea* A. Nels. Bot. Gaz. **52**: 267. 1911. *Oenothera rhomboidea* of Leveille, Mon. Onoth. 287. 1908, in part. *Clarkia gauroides* Dougl., ex Sweet, Brit. Fl. Gard. ser. II, *pl. 379*. 1837. *Opsianthes gauroides* Lilja, Fl. Sverig. Suppl. 25. 1840. *Phaeostoma Douglasii* Spach, Nouv. Ann. Mus. Paris III. **4**: 395. 1835, in part. *Godetia latifolia* Nels. & Kennedy, Proc. Biol. Soc. Washington **19**: 156. 1906.

Plant simple or with few branches; stems 2–11 dm. tall, finely pubescent; leaves few, in well separated, almost opposite pairs, with a few secondary much reduced ones in the axils, upper ones single; blades lance-ovate to ovate-oblong or elliptic, 2–7 cm. long, 0.5–2 cm. wide, acute or blunt, entire or remotely denticulate, glabrate to finely pubescent, on slender petioles 1–3 cm. long; inflorescence rather sparsely strigillose; flowers borne in very few-flowered elongated spikes; buds nodding, ca. 1 cm. long, green; hypanthium 1–3 mm. long, obconic, bearing scales and white hairs at base of filaments; calyx-lobes green, generally distinct in anthesis; petals 5–10 mm. long, 3–6 wide, rose-purple, often lighter at base, sometimes dotted with purple; blade elongated rhomboidal, 2–4 times as long as the rather broad claw which is sometimes rather inconspicuously lobed or toothed at base; stamens unequal; filaments filiform, 3–5 mm. long, the longer ones bearing a slender hairy scale at base, the shorter ones half or nearly as long and with a shorter broader scale; anthers 2–4 mm. long, glabrous; style equaling longer filaments; stigma lobes rounded, ca. 0.5 mm. long, white to purple; capsules 1–3 cm. long, 2–4 mm. thick, 4-angled when dry, narrowed abruptly to a beak 1–4mm. long, and borne on pedicels 1–4 mm. long; seeds brown, densely cellular-pubescent, prismatic, 1 mm. long, with a thickened ridge at the summit, cresting almost lacking.

Type locality, 'From the Great Falls of the Columbia to the Rocky Mountains,' collected by Douglas. Representative of the material studied,—WASHINGTON: Wenatchee region, *Brandegee 780* (G); Spokane, *Kreager 601* (G).—OREGON: Farewell Bend, Crook Co., *Leiberg 482* (G,P); Blue Mts., Grant Co., *Henderson 5634* (G); Eola, Polk Co., *Nelson 4309* (G).—IDAHO: Ketchum, Blaine Co., *Nelson & Macbride 1262* (G,P); Silver City, Owyhee Co., *Macbride 379* (G); Pine Creek Valley, Latah Co., *Heller 526* (G,P); Rush Creek, Washington Co., *Jones* in 1899 (P);—UTAH: East Bountiful, *Clemens* in 1908 (G); City Creek Canyon, near Salt Lake City, *Jones 1838* (P).—NEVADA: Spooner, Douglas Co., *Baker 1138* (G,P); Carson City, *Jones* in 1897 (P).—ARIZONA: Santa Catalina Mts., *Pringle 269* (G).—CALIFORNIA: between Clear Creek and Paradise, Butte Co., *Heller & Brown 5537* (G); Lakeport, Lake Co., *Munz 9876* (P); Yosemite Valley, Mariposa Co., *Abrams 4425* (G,P); Soda Springs, Nevada Co., *Jones* in 1881 (G,P); Kern River Canyon, Kern Co., *Abrams* in 1900 (P); Carmel River, Monterey Co., *Clemens* in 1910 (P); Los Angeles Co., Oakgrove Canyon, *Abrams & McGregor 341* (G,P); San Antonio Canyon, San Gabriel Mts., *Johnston 1404* (P); Forest Home, San Bernardino Co., *Feudge 196* (P); Idyllwild, Riverside Co., *Spencer 1367* (G P), Keen Camp, *Munz 5771* (P); Mesa Grande, San Diego Co., *Spencer 1155* (G,P); Vallecito Canyon, Laguna Mts., *Munz 9712* (P); Sierra Valley, Sierra Co., *Hamlin* in 1904, type of *Godetia latifolia* (Nevada Exper. Sta.).

Clarkia rhomboidea has an unusually wide distribution, ranging from the interior of the Pacific States and adjacent Canada to the Black Hills of South Dakota, and to Arizona. Throughout its range it remains fairly constant, the chief variation being in the amount of the pubescence.

Greene's *C. virgata*, Erythea **3**: 123. 1895, based on collections from Sonoma Co., California by *Bioletti*, and Amador Co., by *Hansen*, was characterized as 'cinereously puberulent throughout,' 'with long suberect, virgate branches rather densely floriferous throughout,' by rather thick, oblong-lanceolate leaves, and slender, scarcely incurved capsules. Material that fits this description is: Irishtown, Amador Co., *Hansen 528*, July 28, 1895 (P); and Agricultural Station, Amador Co., *Hansen 528*, July 1893 (G). A collection from Spooner,

Douglas Co., Nevada, *Baker 1138* (P), approaches these. The various characters assigned by Greene are so variable, and the entity so minor a thing that it does not seem worthy even of varietal rank, but may be regarded as **C. rhomboidea** forma **virgata** (Greene) Munz & Hitchcock, n. comb.

3. CLARKIA ELEGANS Dougl., in Lindl. Bot. Reg. **19**: *pl. 1575.* 1833. *C.elegans* in T. & G. Fl. N. Am. **1**: 515. 1840. *Phaeostoma elegans* Lilja, Fl. Sverig. Suppl. 25. 1840; A. Nels. Bot. Gaz. **52**: 267. 1911. *Oenothera elegans* of Leveille, Monog. Onoth. 289. 1908. *Clarkia unguiculata* Lindl. Bot. Reg. **23**: *pl. 1981.* 1837; T. & G. Fl. N. Am. **1**: 516. 1840. *Phaeostoma Douglasii* Spach, Nouv. Ann. Mus. Paris III. **4**: 395. 1835, in part. *Clarkia Eiseniana* Kell. Proc. Calif. Acad. **7**: 94. 1877.

Plants simple or branched, 2–8 dm. tall; stems glabrous, glaucous; leaves gradually reduced up the stem; leaf-blades lanceolate to lance-ovate, 2–5 cm. long, 0.3–2 cm. wide, acute, remotely denticulate, glabrous, sometimes glaucous, sessile or narrowed into winged petioles 2–7 mm. long; inflorescence pubescent to glandular and pilose, especially the ovaries and calyces; flowers borne in long, loose spikes; buds deflexed, but not nodding, 1.5–2.5 cm. long; hypanthium 2–4 mm. long, campanulate, with a ring of hairs within about half way from the base, as well as additional hairs at the base of the stamens; calyx-lobes united in anthesis, often free at base in bud; petals rose to purple, 1–2 cm. long, 0.4–1 cm. wide, the blade deltoid-rhomboidal, about equal to very narrow claw; stamens in two sets, unequal; filaments 3–7 mm. long, the epipetalous ones the shorter and somewhat flattened, the alternate ones about as long as the petal-claws; anthers unequal, scarcely curling after dehiscence, alternate ones 6–8 mm. long, red or bright yellow, epipetalous ones 3–4 mm. long, white or pale yellow; style equaling or slightly shorter than longer stamens; stigma lobes short, rounded, 1–1.5 mm. long and about as broad, yellow; capsule 1–2.5 cm. long, ca. 2 mm. thick, sessile, beakless or almost so, usually glandular and pilose, but sometimes nearly glabrous, strongly curved to nearly straight; seeds brown, 1 mm. long, cellular-pubescent, possibly even glandular, angled on sides, with cresting very inconspicuous.

Type locality, California, based on material collected by Douglas. Representative of material studied,—CALIFORNIA: without locality, *Douglas*, probably type material (G); Oroville, *Heller 10767* (G); Mendocino Co., Ukiah, *Eastwood 3404* (G); Alpine School House, San Mateo Co., *Elmer 4293* (P); Napa,

Napa Co., *Dwight* in 1899 (G); Knight's Ferry, Sacramento Co., *Bigelow* in 1853–4 (G); Stanford University, *Abrams 1655* (P); Santa Cruz, *Jones 2255* (P); Ft. Tejon, Kern Co., *Abrams & McGregor 307* (G,P); San Luis Obispo, *Palmer 147* (G); Santa Monica Mts., *Abrams 1711* (P); Azusa, *Gordon* (P); Valley Center, San Diego Co., *Feudge 1712* (P); San Luis Rey, *Street* (P).

Individual specimens of this species are often diffcult to distinguish from *C. rhomboidea*, so far as length of claw and petal-shape are concerned, although in the more typical condition and in well pressed specimens the characters are well marked. On the whole, *C. elegans* can be told by its campanulate rather than obconic hypanthium, united calyx-lobes, smoother glaucous stems, ovaries and buds usually with long spreading hairs, its more slender capsules, its longer stigma lobes, and the expanded hairy base of the epipetalous filaments rather than the presence of hairy scales at their base. *C. elegans* tends too, to have more and narrower leaves than does *C. rhomboidea* and they are less apt to be opposite.

For the most part, variation within this species is not sufficient to need special comment. There is a tendency, however, in some plants to lose much of the pilosity of the ovaries and buds; as examples may be cited: Kern River Canyon, *Abrams 11990* and *12009* (P); Big Sandy Creek, Fresno Co., *McDonald* in 1915 (G); Three Rivers, Tulare Co., *Culbertson 4208* (P). In some of these cases the same plant, in others, different plants in the same collection, may show no pilosity or a considerable development of it.

We have seen no authentic material of Kellogg's *C. Eisenianа* but the rather full description makes it seem quite certain that his plant was *C. elegans*. The long slender claw, the slender sessile capsule, and the 'hirsute' condition of the calyx-tube and calyx make this quite certain. We agree, therefore, with Mrs. Curran in reducing it to synonymy, Bull. Calif. Acad. **1**: 137. 1885.

4. CLARKIA XANTIANA Gray, Proc. Bost. Soc. Nat. Hist. **7**: 145. 1859–61. *Phaeostoma Xanthiana* A. Nels. Bot. Gaz. **52**: 267. 1911. *Clarkia parviflora* Eastw. Bull. Torrey Club **30**: 492. 1903. *Phaeostoma parviflora* A. Nels. l.c.

Simple or sparingly branched from near middle; stems 2–7 dm. tall, glaucous in appearance especially on lower portions where exfoliation of epidermis occurs, upper portions minutely strigillose; leaf-blades narrowly to broadly lanceolate, acute, entire to denticulate, sessile or with short petiole, finely pubescent to glabrate; inflorescence grayish-strigillose, flowers borne in a long loose spike; buds deflexed, 1–2 cm. long, tipped with a slender point 1–2 mm. long; hypanthium 2–4 mm. long, without scales but with a broad band of hair within; calyx-lobes 7–15 mm. long, usually united in anthesis, grayish green; corolla 'irregular, the two lower petals turned aside, the curved style protruding through the opening thus made'; petals lavender to rose, often with large spot of crimson or purple at base of blade, petals 1–1.5 cm. long, 0.6–1 cm. wide, cuneate, bilobed with small subulate tooth at base of V-shaped sinus, the lobes ca. $\frac{1}{4}$ the length of the whole petal, the claw broad, 3-4 mm. long; stamens 8, in 2 unequal sets, longer ones almost equal to petals, shorter ones ca. half as long; filaments subfiliform; anthers of longer set 4–7 mm. long, purplish, sparsely ciliate, those of shorter set 1.5–3 mm. long; style equaling petals, lavender or yellow; stigma-lobes short, rounded, 1–1.5 mm. long, yellow to purple; young ovaries deflexed; capsules erect, straight or curved, 4-angled, 1.5–3 cm. long, with beak ca. 1 mm. long or sometimes lacking, sessile or nearly so; seeds brown, obliquely cylindric, 1.5 mm. long, minutely cellular-pubescent, somewhat crested at angles.

Type locality, Fort Tejon, Kern Co., Calif. Material seen,—CALIFORNIA: Kern Co., Ft. Tejon, *Xantus de Vesey 31*, type (G), *Hall 6306* (G,P), *Parish 1898*, in part (G), *Abrams & McGregor 306* (G); Tehachapi, *Curran* in 1884 (G); Kern River Valley, *Coville & Funston 1060* (G); Kern River Road, 15 mi. from Bakersfield, *Peirson 7302* (P); Erskin Creek, *Purpus 5538* (G); Big Rock Creek, Los Angeles Co., *Munz 6879* (P), *Peirson 7300* (P); Antelope Valley, *Oliver* in 1884 (G); Cucamonga Mts., San Bernardino Co., *S. B. & W. F. Parish 952* (G).

The plants cited from the type region have somewhat larger flowers than those from the San Gabriel Mts. and from the Kern River region. It was apparently for these somewhat smaller flowered plants from the last named region that Miss Eastwood proposed the name *C. parviflora*. There is also considerable variation in the size and presence of the 'eye' on the petals, plants from the San Gabriel Mts. and even some from the type locality (*Hall 6306*) lacking it entirely.

5. CLARKIA PULCHELLA Pursh, Fl. Am. Sept. **1**: 260. *pl. 11.* 1814. *C. pulchella* in T. & G. Fl. N. Am. **1**: 515. 1840; Spach, Nouv. Ann. Mus. Paris III. **4**: 396. 1835; Nelson & Macbride, Bot. Gaz. **65**: 62. 1918. *Oenothera pulchella* of Leveille, Monog. Onoth. 288. 1908. *Clarkia elegans* Poir. in Dict. Sci. Nat. **9**: 355. 1817.

Plant simple to diffusely branched, 10–50 cm. tall; stems and inflorescence finely pubescent to strigillose, very leafy; upper leaves not much reduced; leaf-blades linear-lanceolate to spatulate, sessile or with petiole as much as 1 cm. long, entire or remotely denticulate, 2–7 cm. long, 0.2–1 cm. wide, acuminate to acute or lower ones obtuse; flowers in a short crowded spike which elongates in fruit; buds nodding, 1–2 cm. long, green to lavender, usually tipped with slender point 1–2 mm. long; hypanthium 2–3 mm. long, lavender, without hairs within; calyx-lobes usually united in anthesis, 1–1.5 cm. long, lavender; petals orbicular-obovate in outline, lavender to purple with lighter veins, 1.5–3 cm. long, 1–2.5 cm. wide, 3-lobed, the lobes 6–10 mm. long, about equal in length, but with middle one usually wider than lateral ones, claw quite narrow, one-third to one-half as long as blade, with a divaricate tooth on each side about one-third way from base, stamens 8, in two sets, the epipetalous ones small, scarcely if at all functional without scales at base, the longer ones 3–8 mm. long with erect sparsely pubescent scale at base; anthers yellow, coiling after dehiscence, longer ones 3–5 mm. long, shorter ones one-fourth as long; style equaling to slightly exceeding longer stamens; stigma lobes rounded, 1–3 mm. long, whitish; capsule 1–2.5 cm. long, scarcely beaked, straight to strongly curved, 8-ribbed, grooved on each face, appearing square when dried, borne on pedicel 3–10 mm. long; seeds brown, cellular-puberulent, depressed, oblique, not angled, 1 mm. long, with minute cresting.

Type locality, 'Opposite the town of Kamiah, Idaho,' on the Kooskooskee River. Representative of material seen,—BRITISH COLUMBIA: near Int. Bound., between Kettle and Columbia Rivers, *Macoun 64,602* (G,P).—WASHINGTON: Spokane, *Kreager 15* (G); Colfax, *Jones* in 1911 (P); Pullman, *Eastwood 13142* (P).—OREGON: Portland, *Jones* in 1902 (P); Mt. Hood, *Jones* in 1897 (P); the Dalles, *Davidson* in 1885(P).—IDAHO: St. Mary's River, *Leiberg 1090* (G,P); Moscow, *Abrams 713* (P); Boise City, *Wilcox* in 1881 (G).—MONTANA: Big Fork, *Jones 8401* (P); Evaro, *Jones* in 1909 (P); Ravalli, *Jones* in 1909 (P).—SOUTH DAKOTA: Black Hills, *Forwood* in 1887

(G). Introduced into the eastern United States, as, VERMONT: Rochester, *Dutton* in 1914 (G).—MASSACHUSETTS: Lexington, *Piper 3230* (G).

6. CLARKIA CONCINNA (F. & M.) Greene, Pittonia 1: 140. 1887.—*Eucharidium concinnum* Fisch. & Meyer, Ind. Sem. Hort. Petrop. 2: 37. 1835; T. & G. Fl. N. Am. 1: 516. 1840. *Eucharidium grandiflorum* F. & M. Ind. Sem. Hort. Petrop. 7: 48. 1840. *Clarkia grandiflora* Greene, Fl. Francisc. 223. 1891.

Plant simple to freely branched, 1.5–4 dm. tall; stems glabrate below and strigillose toward summit; leaf-blades lance-ovate to broadly elliptic, 1.5–5 cm. long, 0.3–2 cm. broad, acute to blunt, nearly entire, borne on slender petioles 0.5–2 cm. long, glabrate; flowers in upper axils often crowded; buds usually nodding, purplish or green, 1–2 cm. long exclusive of hypanthium, tipped with a very short point; hypanthium 1.5–2.5 cm. long, very slender, scarcely widened at summit, slightly swollen at base, yellow to purple, finally pubescent within, especially at base of filaments, but without scales or band of long hairs; calyx-lobes reddish, sometimes green, 1–2 cm. long, united at tips in anthesis, lower half of the inner surface orange to red, terminal portion reflexed; petals 1.5–3 cm. long, 1–1.5 cm. wide, deep pink to rose lavender, purplish on drying, central portion paler, blade about twice as long as claw, three lobed, central lobe spatulate to obovate and slightly exceeding lateral lobes in length and width, 'the three upper petals approximate, the fourth slightly declined'; stamens 4, alternate with petals; filaments slightly flattened, not dilated at base, 5–7 mm. long, lavender or purple; anthers 3–4 mm. long, purplish, ciliate-villous, curled after dehiscence, 'upper anthers extrorse, lower anthers introrse, the opening of all thus facing upper lip of corolla'; style equaling stamens; stigma lobes ca. 1 mm. long, equally broad; capsules 1.5–2.5 cm. long, 1.5–2.5 mm. thick, 4-angled when dried, sessile or on short pedicels, tapered gradually to a beak 1–3 mm. long; seeds minutely transversely corrugated, ca. 2 mm. long, flattened, with very prominent cresting.

Type locality, Ft. Ross, California. Representative material,—CALIFORNIA: Hupa Indian Reservation, Mendocino Co., *Chandler 1325* (G); Kenwood, Sonoma Co., *Michener & Bioletti* in 1893 (P); near Alder Springs, Glenn Co., *Heller 11457* (G); Vaca Mts., Napa Co., *Jepson* in 1891 (G); Lakeport, Lake Co., *Munz 9871* (P); Berkeley, Alameda Co., *Blankenship* in 1892 (G); Oakland, *M. E. Jones* in 1881 (P);

Bolinas Ridge, Marin Co., *Palmer 2407* (P); Steven Creek, Santa Clara Co., *Pendleton 755* (P); Santa Barbara Co., *Torrey 94* (G).

So far as we can judge, *C.grandiflora* falls well within the natural variation occurring in a fairly large number of specimens of *C. concinna*.

7. CLARKIA BREWERI (Gray) Greene, Pittonia 1: 141. 1887.—*Eucharidium Breweri* Gray, Proc. Am. Acad. 6: 532. 1865. *Clarkia Saxeana* Greene, Pittonia 1: 140. 1887.

Simple or branched, 10–20 cm. tall, stems finely pubescent; leaf-blades lanceolate to oblong-lanceolate, 2–4 cm. long, 0.3–0.6 cm. wide, acute, entire, glabrate, on petioles 5–10 mm. long; inflorescence sparsely strigillose, flowers few; buds nodding, 1–2 cm. long, greenish, abruptly narrowed to a point 1–3 mm. long; hypanthium 2.5–3 cm. long, conspicuously swollen at juncture with ovary, finely pubescent within but lacking scales or band of hairs; calyx-lobes reddish or green, united in anthesis; corolla rose-pink, irregular, the two lower petals bent downward, each petal strongly obcordate with the central lobe merely a spatulate appendage from the sinus and one-third to one-fourth as wide as the lateral lobes, petals 1.5–2.5 cm. long, almost as wide, the sinus 4–6 mm. deep, claw 3–4 mm. long; stamens 4, equal, alternate with petals; filaments 1–1.5 cm. long, somewhat flattened and greatly dilated at summit; anthers 4–7 mm. long, conspicuously ciliate-villous, lavender or red, erect, not coiled after dehiscence; style equaling or slightly exceeding stamens; stigma lobes lance-linear, 3 mm. long, ca. 1 mm. broad; capsule 2–3.5 cm. long, 2–3 mm. thick, tapering to a slender beak 2–4 mm. long, sessile; seeds 3 mm. long, not pubescent, but conspicuously transversely corrugated, brown, flattened, with very prominent cresting.

Type locality, 'dry summit of Mount Oso, at elevation of about 3200 ft.' in Stanislaus Co., California. Material seen,—CALIFORNIA: headwaters of the San Benito River, San Benito Co., *Hall 9939* (P); Emmett to Panoche Pass, San Benito Co., *Abrams & Borthwick 7903* (P); Mt. Oso, Stanislaus Co., *Brewer 1247*, type (G); Cerro Bonita Mine, Panoche, Fresno Co., *Gilmore* in 1878 (G); Geysers, Napa Co., *Dr. Saxe*, type material of *C. Saxeana* (G).

The two remarkable features of this species are the clavate filaments and the narrow median lobe of the petals. Greene's description of *C. Saxeana* fits *C. Breweri*, and authentic material at the Gray Herbarium which was sent in 1888 to Dr. Watson

by Mrs. Curran from the California Academy Herbarium makes the identity of the two species certain.

UNCERTAIN OR EXCLUDED SPECIES

1. CLARKIA MODESTA Jepson, Man. Calif. 673. 1925. The type of this species from Waltham Creek, San Carlos Range, California, *Jepson 2690*, has been loaned us through the kindness of Professor Jepson. It agrees perfectly with *Heller 11458* from ten miles east of Alder Springs, Glenn Co. (G), in the shape of petals, stamens, ring of hair in uppermost portion of hypanthium, slender capsules, and all other features so far as we can discover. The Heller collection and other plants from central California, such as: *Bigelow* in 1853–4 from Knight's Landing, Sacramento Co. (G); *Congdon* in 1895 from Lewis, Mariposa Co. (Stanford); and *K. Brandegee* from Antioch, Contra Costa Co. (Stanford) are being referred to *Godetia epilobioides* in the paper by the junior author. From some material of *G. epilobioides* they differ in the somewhat narrower pink petals, but in the southern part of the range every degree of intergradation has been found. The claw is no longer than on the broader petals of typical *G. epilobioides*.

2. GAUROPSIS LANCIFOLIA Presl, Epim. Bot. 219. 1849, from Mexico was referred by Leveille, Monog. Onoth. 287. 1908 to his *Oenothera rhomboidea* (*Clarkia rhomboidea* Dougl.). So far we have been unable to get material or information which enables us to arrive at any decision concerning *Gauropsis lancifolia*.

POMONA COLLEGE
CLAREMONT, CALIFORNIA

Notes on the marine algae of Florida

Wm. Randolph Taylor

(with two text figures)

In closing the manuscript of his report upon the Florida marine algae the writer (1928) felt that he had incorporated the great majority of the species which could confidently be assigned to the state, and that the catalog was essentially complete. However, there remained a considerable number of reports that seemed inadequately confirmed or otherwise improbable, and the further possibility that a search of the scattered literature on the algae of South America and the Caribbean Sea might yield others. The labor involved in searching upwards of 150 papers bearing directly upon this territory for possible Florida records would not soon have been justified had not a very considerable amount of undetermined West Indian and Brazilian material come into the writer's hands for study. This forced him into the preparation of a catalog of the algae of the entire western tropical Atlantic Ocean, and naturally brought to light some previously unconsidered Florida reports. While very few of these are to be accorded much confidence, it is distinctly worth while to bring all of them together and to indicate their probable importance to the catalog of the algae of the state. The additions are not so much directly derived from earlier publications as from comparatively recent and important papers, items from which were withheld from the original Florida report for various reasons. Eighteen names are here definitely added to the flora, giving a total of 478 different algae, of which 62 are forms and varieties of species also present in the typical condition. In addition consideration is given here to 28 names which do not appear to be sufficiently well known (as representing Florida plants) to justify inclusion at this time, but which cannot be reduced to synonymy.

The Guadeloupe flora has long been held to be by far the richest recorded for the West Indies or indeed anywhere near the Atlantic coast of the Americas. That this impression is far from correct has long been clear to the writer. While thoroughly studied in the field, the flora as represented by the catalog of Mazé & Schramm (1870–77) involves so many obsolete names, *nomina nuda*, and incorrect determinations that it cannot now

be accepted as presented. It appears that somewhat over 250 species well recognized in the West Indies can be directly associated with names they use. In addition somewhat over 290 species names are doubtful, since inadequately confirmed in the literature, but have not been reduced to synonymy under the familiar West Indian species. The distinctions between these groups being at present largely based on the writer's personal opinion, the relative numbers are subject to change.

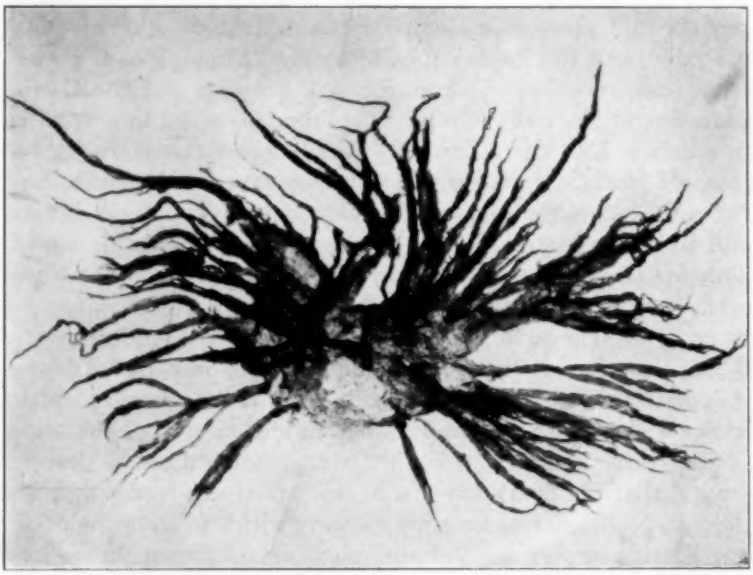

Fig. 1. Habit of typical specimen of *Hydrocoleum penicillatum*, ×0.95. The more delicate filaments which extend beyond the general mucous mass of the erect branches of the thallus do not appear distinctly in the reproduction.

The rest of their nearly 800 marine algal names (excluding diatoms) are either reduced to synonymy or (in a small proportion) apply to varieties and forms also represented by the typical condition. In comparison with the Florida flora of nearly 420 well authenticated species we have a Guadeloupe flora of about 250 species very probably present, and a residue of about 290 names from which additions will be possible when a review of the original material allows accurate disposition of the records to be made. The descriptions of new species are too inad-

equate to be of much assistance, and many of the records are very improbable indeed. At the time of the preparation of the Florida algae report it was not possible to analyze suitably the Guadeloupe records, so this opportunity is taken to point out the present state of our knowledge. As was indicated there, the recorded algal flora of none other of the West Indies appears as rich as the coast of Florida.

The writer desires to express his indebtedness to Dr. M. A. Howe of the New York Botanical Garden for much kind assistance and for access to the algal collections of the Garden. The herbarium of John Hooper was examined for Florida algae through the kindness of the Brooklyn Botanic Garden.

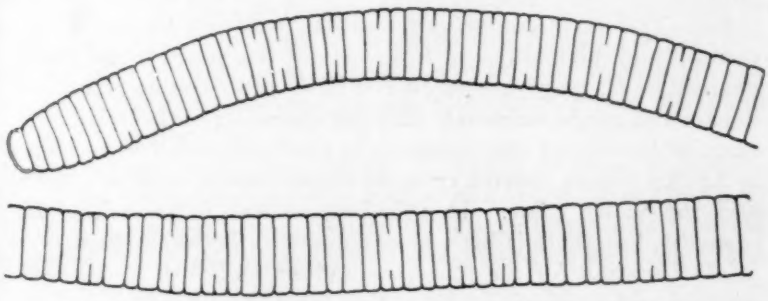

Fig. 2. Apex and more median portions of trichomes from *Hydrocoleum penicillatum*, ×900, approx. As prepared from dried material, the sketch probably overemphasizes the degree of constriction of the trichome at the cell junctures.

ADDITIONAL RECORDS

Hydrocoleum penicillatum n. sp. Plant forming an expanded layer, little colored, mucous but including calcareous sediment or perhaps partly calcified; from this arise abundant fasciculate projections usually about 3.0 cm., but reaching 5.0 cm. tall and 2.0 mm. in diameter, simple or with 1–10 main branches, mucous and pale below, above increasingly pilose with dark brown-violet filaments, the ends more or less penicillate and attenuate; trichomes 9.5—(*11.1*)—14.3μ in diameter, cells 1.9—(*2.8*)—3.8μ long; trichomes obviously calyptrate, calyptra depressed rounded and pale straw color to nearly colorless; trichomes hardly capitate, slightly tapered near the apex which is nearly straight, slightly constricted at the transverse walls which are inconspicuously and rarely granulated; sheaths hightly confluent, the individual ones hardly recognizable. (Figs. 1, 2.)

The above description was based upon dried material moistened with lactic acid and glycerine before mounting in water for microscopic study. Since the limits of the sheaths could not be made out clearly, no decision could be reached as to the number of the filaments within a sheath. There was noted a strong tendency toward a longitudinal fracture of the filaments which did not disappear on soaking, and this gave a confusing impression of trichome diameter until recognized from the exact correspondence of the transverse walls on opposite sides of the split and the relation to the apical region of the filament. In the central portions of the mounts the material appears to have dried somewhat too slowly and there was discharged onto the paper a brilliant pink pigment, leaving the specimens bright green. This is, of course, not unusual in Myxophyceae which contain pink pigments. In *Hydrocoleum* this plant would come nearest to *H. lyngbyaceum* on the basis of trichome size, and in part also on the extremely diffluent character of the individual sheaths, but differs conspicuously in the habit assumed and also in having rather shorter cells, no conspicuously capitate apex and the violet color. In this last respect it resembles *H. comoides*, but there is little else in common between them.

The station for the material is given as South Shore near Battery and south of Old Fort, Key West, Florida; collected by R. Thaxter, Feb. 1898; type material in Farlow Herbarium, Harvard Universty.

LYNGBYA LUTEA (C. Ag.) Gom. This plant is attributed to Florida by Tilden (Minnesota Algae 1: 115) and is similarly accepted by Hoyt (1920). As the plant occurs in North Carolina and is reported in the West Indies, the Florida record is not improbable. (p. 44).[1]

MICROCOLEUS CHTHONOPLASTES Thuret ex Gom. A collection of this species made by R. Thaxter at Cocoanut Grove, Florida, 1898–99, has been seen by the writer and the determination appears to be correct. Associated were *Lyngbya confervoides* and indeterminate Chroococcaceae. The habitat was perhaps brackish rather than completely marine. (p. 45).

MONOSTROMA LATISSIMUM (Kg.) Wittr. Collins (1909) records this species from Florida, and Collins & Hervey (1917) from Bermuda. (p. 56).

[1] Page references are to the writer's report on Florida algae (1928).

ULVA FASCIATA Delile. Collins (1909) records this species from Florida. As it is common and widespread in the American tropics, the record is probably correct, and material in Curtiss' Algae Floridanae at the New York Botanical Garden appears to be this species, collected at Oceanus in 1896. (p. 57).

ULVA LACTUCA L., var. LATISSIMA (L.) DC. Specimens of this variety from Key West, Florida, have been seen by the writer, especially those in the Farlow Herbarium collected by 'B. M. W., Sta. 26, June 19, 1893.' This appears to be a new record. (p. 57).

CHAETOMORPHA CLAVATA (C. Ag.) Kg. Collins (1909) lists this plant from Florida. As it is known from the Bahamas and the outer West Indies the record is probably correct. (p. 60.)

HALICYSTIS sp. A member of this genus has been reported by Blinks (1927) as present at Bermuda and Florida (Dry Tortugas), without assurance as to the specific determination. The writer has Bermudan samples of this material, and agrees in the dispositon of it.

STRUVEA PULCHERRIMA (J. E. Gray) Murray & Boodle. Collins (1909) mentions the finding of a fragment of this plant by Mrs. Hall at Jupiter Inlet, Florida, as being only a second record. The original plant (also a fragment, though larger) was dredged in the Gulf of Mexico by Menzies. The record is probably correct, since the plant is very distinctive, although excessively rare. (p. 74.)

RHIZOCLONIUM RIPARIUM (Roth) Harv. While Collins (1909) does not attribute this plant to Florida, Hoyt (1920) does consider that it occurs there. Since it appears in the Bermudas and Bahamas, it probably is present in Florida also. (p. 66.)

BRYOPSIS RAMULOSA Mont. This is reported from Florida by Collins (1909). (p. 93.)

GELIDIUM CRINALE (Turn.) J. Ag. Excellent specimens of this plant are to be found in the New York Botanical Garden Herbarium, collected at St. Augustine, Florida, by Mrs. G. A. Hall, and from St. Augustine Inlet by A. H. Curtiss in April 1897. (p. 142.)

COTTONIELLA FILAMENTOSA (Howe) Børg. This plant is described from Florida by Howe (1905b). (p. 162).

CHONDRIA CNICOPHYLLA Melv. This plant was described

from western Florida by Melvill in Murray (1889), and the record is so far to be accepted. (p. 170.)

LAURENCIA GEMMIFERA Harv. This species was described from Florida and the record was accepted by Murray (1889) and more recently by Howe (1920). Plants belonging under this name were secured by the writer from Key West and Dry Tortugas, the omission from his text (1928) being an oversight. At Dry Tortugas *L. gemmifera* was obtained at Bird, Loggerhead, and East Keys from the sublittoral to a depth of 6 meters, appearing to be primarily a plant of shallow, quiet, strongly illuminated water. It most resembles forms of *L. obtusa* or of *L. Poitei*, being distinguishable by the turgid or papillate contour of the epidermal cells near the apices of the branches. (p. 179.)

ANTITHAMNION PLUMULA (Ell.) Thuret. Specimens of this plant have been seen by the writer in the Farlow Herbarium, purporting to have been dredged off Key West, Florida. This appears to be a new record, and a very considerable extension of the American range. (p. 188.)

LITHOPHYLLUM BERMUDENSE Fosl. & Howe. A record of Florida material by the authors of the name (1906) is to be accepted. (p. 209.)

LITHOTHAMNIUM FLORIDANUM Fosl. Foslie (Algol. Not. **2**: 11. 1906) and DeToni (Sylloge Algarum **4**: 1782) accord this plant to Florida. (p. 209.)

DOUBTFUL RECORDS

ENTEROMORPHA COMPRESSA (L.) Grev. Murray (1889) records this plant from Florida on the basis of a report by Melvill (1875) and on Harvey's statement that its distribution is general in North America. Collins (1909) does not grant a more southerly range than New Jersey. (p. 55.)

ENTEROMORPHA RAMULOSA (Eng. Bot.) Hooker. Collins accepts this plant (1909) as occurring from New England to the West Indies; Hoyt (1920) does not mention it, but DeToni (Sylloge Algarum **1**: 134) assigns it to Florida. On the whole, the Florida record is not well confirmed. (p. 56.)

CLADOPHORA PROLIFERA (Roth) Kg. Hooper (1850) reports this species from Florida, but his determinations deserve little confidence. Collins (1909) does not accept the record;

perhaps the plant was *C. fuliginosa* or *Cladophoropsis*. However, records from farther south do appear to be correct. (p. 64.)

CAULERPA COCCINIA. Hooper (1850) lists a plant under this name, but the writer has been unable to determine what he had in hand, or to locate any other use of the name.

CAULERPA TAXIFOLIA (Vahl.) C. Ag. Børgesen (1913) lists this plant from Florida, but without particular explanation. Collins (1909, 1912, 1918) does not accept the record, nor does it appear in other places where it would be expected. While the plant is found in the outer West Indies and even Bermuda, and so is to be expected in Florida, it is best to hold the Florida record in question until more specific information on the local specimens is available. (p. 103.)

ASPEROCOCCUS CLAVATUS. This record by Hooper (1850) for Florida is unconfirmed, and is probably incorrect. The significance of the name, at least, is not clear. (p. 110.)

ASPEROCOCCUS ECHINATUS (Mert.) Grev. This record by Hooper (1850) is unconfirmed, and is probably incorrect. The species is a north-temperate one. (p. 110.)

CASTAGNEA VIRESCENS (Carm.) Thuret. Hooper (1850) and Farlow (1876) both list this species, but the records are probably incorrect (Taylor 1928, p. 113). An examination of a specimen from Garden Key in the Collins Herbarium at the New York Botanical Garden showed sporangia up to 44μ in diameter. Since the plant was a sturdy one, somewhat suggesting *C. virescens*, measurements were made of sporangia on slides of New England *C. virescens* sectioned in celloidin, where the sporangia were found to reach 66μ in diameter and 95μ in length. From this and other features of structure it seems best still to consider all of the Florida material to be *C. Zosterae*. (p. 113.)

PADINA COMMERSONII Bory. Murray (1889) lists this plant from Florida, but the record is to be considered very doubtful. Perhaps it was based on juvenile material of *P. Sanctae-Crucis*. (p. 123.)

PADINA PAVONIA (L.) Gaill. This species has been reported from Florida and for several of the West Indies by Murray (1889). Collins (1917) in announcing its presence at Bermuda emphasized the unreliability of the older records. There is no reliable record of its presence on the Florida coast. (p. 123.)

CYSTOSEIRA ERICOIDES Goodw. & Woodw. Hooper (1850) lists this plant, but there is no confirmation of its presence in Florida or elsewhere in the American tropics. (p. 126.)

SARGASSUM DENTIFOLIUM (Turn.) C. Ag. Murray (1889) assigns this species to Florida, but there is no other record beside that of Farlow (1876), on which Murray's is probably based. Perhaps Farlow had *S. pteropleuron;* at any rate the report is very doubtful. (p. 127.)

ACROCHAETIUM VIRGATULUM (Harv.) J. Ag., var. LUXURIANS (J. Ag.) Rosenv. Murray (1889) accords this variety, under the name of *Callithamnion luxurians* J. Ag., to Florida on the basis of Melvill's collections. The plant under the latter name in Harvey (1853) does certainly appear to be an *Acrochaetium* but is not there listed from Florida. As old determinations in *Acrochaetium* are often untrustworthy it is best to hold the Florida record in question. (p. 134.)

HELMINTHOCLADIA CALVADOSII (Lamx.) Setch. Murray (1889) accepts reports of this plant under the name of *H. divaricata*. Murray, Collins & Hervey (1917), and Howe (1918) accept the plant as present at Bermuda. However, as there is no direct confirmation of Melvill's (1875) report of the plant in Florida, the record may best be held in question. (p. 135.)

SCINAIA FURCELLATA (Turn.) Bivona. The Florida report of the species comes from Harvey (1853) through Murray (1889). The material very probably will be found to be *S. complanata*, which is the tropical species, while *S. furcellata* is found in more northern and colder waters. (p. 141.)

STENOGRAMME INTERRUPTA Mont. The Florida material passing under this name seems to consist of a sterile fragment found by Harvey (1853) at Key West. While reproducing plants are quite characteristic, the sterile plants are much less so, and in view of the character of the material and the absence of other records from the American tropics it is best to consider the record as very doubtful. (p. 147.)

GRACILARIA ARCUATA J. Ag. Mention of this species from Florida appears in DeToni (Sylloge Algarum **6**: 259). As the only other record from the American tropics appears in Mazé & Schramm (1870–77) and may not be based on similar material, the Florida report is ill confirmed and may be held in doubt. (p. 151.)

GRACILARIA ARMATA (C. Ag.) J. Ag. This plant is reported from Florida by Harvey (1853), but it is characteristically European. There are several other, but not very convincing, reports from the American tropics. Of these the one accepted by Murray (1889) from Kemp and Rein for Bermuda is attributed by Collins & Hervey (1917) to *G. ferox*, and the Florida record should perhaps be likewise disposed of. (p. 151.)

GRACILARIA BIFLABELLATA J. Ag. This plant is recorded as having been communicated by Mrs. Curtiss, and so is probably from Florida (J. Agardh, Spec. Gen. et Ord. Algarum **3**[1]: 87. 1901). The plant, which somewhat suggests *G. lacinulata* in appearance, is by no means well known. (p. 151.)

GRACILARIA DURA (C. Ag.) J. Ag. Since the only report from Florida involving this species apparently is that of Hooper (1850), and since other reports from the American tropics are unsatisfactory, the record may be considered very doubtful. Material originally under this name in the New York Botanical Garden, apparently collected by Wurdemann, seems to belong to *G. cornea*. (p. 154.)

GRACILARIA HELMINTHOCHORTON. This name is assigned to a Florida alga by Hooper (1850), but no other use of it is familiar to the writer. The record may be considered as of no value. (p. 154.)

GRACILARIA TRIDACTYLITES Crn. This plant is attributed 'ad oras insulae Sanctae Augustini (Dā. Hall)' in DeToni (Sylloge Algarum **6**: 269). Mrs. Hall's material was primarily from Florida, so St. Augustine in northern Florida is probably the source of her specimens. The plant is by no means well known. (p. 155.)

HYPNEA ROBUSTA. This name is assigned to a Florida alga by Hooper (1850), but no other use of it is familiar to the writer. The record may be considered of no value. (p. 157.)

POLYSIPHONIA FOENICULACEA (Drap.) J. Ag. Murray (1889) records this plant under the name *P. hirta* as having been reported from Florida by Harvey and Melvill. It does not seem to be in Harvey's Nereis (1853, 1858) under either form; lacking other records from tropical America, its occurrence must be considered very doubtful. (p. 183.)

CALLITHAMNION POLYSPERMUM C. Ag. Murray records (1889) this species from Florida on the authority of Harvey

(1853), who considers that it is present at New York, Charleston and St. Augustine. Hoyt (1920) rather hesitatingly records it from Beaufort. As it has not been found to be a member of the southern Cape Cod flora, its occurrence in the north is unconfirmed, and altogether it is best to hold the Florida record in question in the absence of authentic material. (p. 189.)

GRIFFITHSIA CORALLINA (Lightf.) C. Ag. Harvey (1853) records from Florida what is probably *G. globulifera*. The European *G. Corallina* is doubtfully present in the American tropics, although Sluiter (1908) has indeed reported it from Venezuela. (p. 194.)

SPERMOTHAMNION PELLUCIDUM (Farl.) DeToni. Murray (1889) accepts this plant as from Florida under the name of *Callithamnion pellucidum*. Perhaps the record should be held in question until the plant is re-collected and better known. (p. 196.)

CORRECTIONS TO TEXT ON FLORIDA ALGAE

It is appropriate to call attention here to errors which have so far been recognized in the writer's Marine Algae of Florida (1928). It is neither necessary to correct nor significant to indicate in detail the infrequent typographical errors. Omissions have been discussed earlier in the present paper. The following are mistakes which may prove misleading if uncorrected:

Page 44, 51, 191 and elsewhere: references to Farlow (1891) and (1882) read as (1881), and Farlow (1875) as (1876). Page 89: the authorities for the first species described should be *Udotea conglutinata* (Ellis & Solander) Lamouroux. Page 94: the second species described should be spelled *Derbesia vaucheriaeformis* (Harvey) J. Agardh. Page 95: the parenthetic clause in the third line of the description of *Caulerpa Ashmeadii* should read—(pinnules 1 to 2 cm. long). Page 100 and elsewhere for citations of Foerskal read Forskål, but see Collins (1909, p. 413, 419, etc.). Page 102: the correct citation of the second variety mentioned is var. *occidentalis* (J. Agardh) Børgesen. Page 107: line 3 of the comment upon *Ectocarpus confervoides* lacks the word 'Howe' before the initial word 'reports.' Page 121: *Dilophus* should precede *Neurocarpus*. Page 124: the correct citation for the first species described

should be *Spatoglossum Schroederi* (Mertens) J. Agardh. Page 126: the second species described should be cited *Sargassum cymosum* C. Agardh. Page 131: the name at the end of the first line should be C. Agardh. Page 149: *Eucheuma isiforme* is illustrated on Plate 23, fig. 2. Page 169: the correct citation of the first form mentioned is forma *disticha* J. Agardh. Page 186: *Vidalia obtusiloba* is illustrated on Plate 29, fig. 4. Page 189: the name on the first line should be *Callithamnion byssoideum* Arnott.

Page 196: SPYRIDIA. The distinguishing features for *S. aculeata* and *S. filamentosa* seem unsatisfactory as propoesd. The Florida variety of *S. aculeata* may be recognized by the hamate tips of the branches and by the recurved spines on the ramular nodes, as well as by habit, since these features are not found in *S. filamentosa*. But the characters offered, based on the number of cells at the nodes of the ramuli and the relative number of nodal and internodal cells on the main axes, are unsafe. It appears that on the ramuli the nodal cells may exceed 8 in both species, though more numerous in *S. aculeata*. On the axes both have at first cells twice as broad and half as many on the nodes as on the internodes, but in *S. aculeata* these divide to a number equal to those over the internodes sooner than in *S. filamentosa*. Later the zonation becomes irregular and obscure in both species. When, as often happens in depauperate dried material, the hamate tips and recurved aculei are absent from plants with the habit of *S. aculeata hypneoides*, it becomes hard to distinguish sharply from *S. filamentosa*.

Page 210: the first variety described should be cited var. *ornatum* Foslie & Howe. Page 216: for the 53rd entry read—Enteromorpha Harvey, (Chrysymenia), 159.

UNIVERSITY OF PENNSYLVANIA
PHILADELPHIA

Literature cited

(With the exceptions below, papers referred to in this article will be found listed in the writer's earlier Florida algae report, 1928.)

Blinks, L. R. On *Valonia* and *Halicystis* in eastern America. Science **65**: 429–430. 1927.

Foslie, M., & M. A. Howe. New American coralline algae. Bull. New York Bot. Gard. **4**: 128–136. 1906.

Hooper, John. Introduction to algology, with a catalogue of American algae or seaweeds, according to the latest classification of Prof. Harvey. 34 pp. Brooklyn, 1850.

Sluiter, C. P. List of algae collected by the Fishery-Inspection at Curaçao. Rec. Trav. Bot. Neerland. **4**: 231–241. 1908.

Taylor, W. R. The marine algae of Florida, with special reference to the Dry Tortugas. Carnegie Inst. Washington Publ. 379: 1–219. *f. 1–3+pl. 1–37*. 1928. (Papers from the Tortugas Laboratory Vol. 25.)

Aconitum macilentum Greene

WILLIAM A. DAYTON[1]

(WITH PLATE 4)

In 1912 Mr. Charles E. Fleming (now head of the Department of range management at the Nevada Agricultural Experiment Station) and Mr. Jesse L. Peterson (now range examiner on the Whitman National Forest) made plant collections, aggregating 225 specimens, in connection with a grazing reconnaissance of the Minam (now part of the Whitman) National Forest, northeastern Oregon. Among these specimens is a monkshood, Mr. Fleming's no. 151, Forest Service serial no. 5171, collected at 6800 ft., in meadows near the base of Eagle Cap, the highest peak in northeastern Oregon. This specimen was pronounced by the late Dr. E. L. Greene (at that time consulting botanical expert of the Forest Service) to be new to science and was named and described[2] by him as:

Aconitum macilentum Greene, spec. nov.

Radix parva, tuberiformis, ovata, fibras tenues nigricantes emittens. Caulis unicus tenuis erectus simplex, 3–5 dm altus, foliis paucis breviter petiolatis instructus, apicem versus, una cum florum pedicellis, pilis virentibus molliter hirtellus. Folia utrinque glabra, profunde, subdigitatimque 5-lobata, lobis late lanceolatis, aut subintegris aut incise dentatis. Flores perpauci, tenuiter pedicellati; sepala anteriora oblongolanceolata; galea elongato, sacco brevi obtuso. rostro subulato, longiusculo, horizontaliter extenso, et cum petalis exterioribus piloso-ciliato.

Minam National Forest. Oregon, 25 Aug. 1912,[3] C. E. Fleming. The species, though quite tall, is slender and delicate, the flower in some specimens one only.

It will be noted that Dr. Greene makes no reference to his disposition of this specimen. It was never returned to the Forest Service range plant herbarium in Washington.

Mr. Douglas C. Ingram, in change of range research in the Portland (Oregon) office of the Forest Service, has recently submitted to Washington for certain editorial matters the District office headquarters duplicate of this specimen, and this has proved to be a true co-type of *Aconitum macilentum* Greene.

[1] In charge range forage investigations, office of Range Research, U. S. Forest Service.

[2] Greene, Edward L. Novitates Boreali-Americanae, VII. Repert. Spec. Nov. **13**: 321. 1914.

[3] Forest Service duplicate material all has 'August 28, 1912,' as the date of collection; '25' is probably a typographical error.

The type of the species appears to be lost—at least it is not in the U. S. National Herbarium. The Forest Service has, therefore, deposited the very satisfactory duplicate from its Portland office, as co-type, in the type collection of the National Herbarium (plate 4).

While this Minam plant is, as Dr. Greene evidently implied in his specific name *macilentum*, rather 'thin' and depauperate, yet this condition might be anticipated by anyone familiar with its somewhat bleak habitat, and I am personally unable to see differences between it and typical *Aconitum columbianum* Nutt., the common monkshood of the Blue Mountains. In fact I saw this monkshood in its type locality the summer before Mr. Fleming collected it, but failed to collect it as I assumed it to be the same as the monkshood elsewhere common in the region, the general form of flower and leaf being individual. Mr. Ivar Tidestrom, to whom the specimen was recently shown, agrees that he cannot distinguish it from *A. columbianum*. Apparently *Aconitum macilentum* Greene must be remanded to synonymy under *A. columbianum* Nutt.

Explanation of plate 4

Co-type of *Aconitum macilentum* Greene, now deposited in the type collection of the United States National Herbarium.

CO-TYPE OF ACONITUM MACILENTUM GREENE

UNIV. OF MICH.

Type of the genus Jatropha

KENNETH K. MACKENZIE

The original description of the important tropical genus *Jatropha* L. (Gen. Pl. 288.1737) was as follows:

JATROPHA*. Manihot *Tournef.* 438. *Dill.* elth. 173. Jussievia *Houst.* A. A. 721.

**Masculini Flores:*

CAL: *Perianthium* vix manifestum.

COR: monopetala. *Tubus* brevissimus. *Limbus* quinquepartitus: *laciniis* subrotundis, concavis, patentibus.

STAM: *Filamenta* decem, subulata, in medio approximata, quinque alterna breviora, erecta, corolla breviora. *Antherae* subrotundae, versatiles.

PIST: *Rudimentum* debile in fundo floris latet.

**Feminini Flores* in eadem umbella cum masculinis.

CAL: ut in masculinis.

COR: ut in masculinis.

PIST: *Germen* subrotundum, trisulcatum. *Styli* tres, dichotomi. *Stigmata* obtusa.

PER: *Capsula* subrotunda, tricocca, trilocularis: *loculis* bivalvibus.

SEM: solitaria, subrotunda.

In the companion volume, Hortus Cliffortianus (p. 445. 1737–9) Linnaeus gave three species, as follows:

1. Jatropha foliis multipartitis laevibus, stipulis setaceis multifidis. (To this species in 1753 he gave the name *Jatropha multifida*. It is the plant figured by Dillenius and cited by Linnaeus at the commencement of his description of *Jatropha*.)

2. Jatropha foliis palmatis dentatis retrorsum aculeatis. (To this species in 1753 Linnaeus gave the name *Jatropha urens*. Both in the Genera Plantarum (p. 384) and in the Hortus Cliffortianus he drew attention to the peculiarities of this species, but these were not sufficient he thought to constitute a distinct genus. He first thought *Jussievia* Houston was based on this plant and his remarks are made to apply to *Jussievia* of Houston.)

3. Jatropha foliis cordatis angulatis. (To this species in 1753 Linnaeus gave the name *Jatropha Curcas*.)

Both species 1 and 3 have sepals and petals well developed, and do not agree with the Linnaean generic description.

In the fifth and sixth editions of the Genera Plantarum, Linnaeus described the genus much as in the first edition, but

made some changes. His description in the fifth edition (p. 437. 1754) reads as follows:

961. JATROPHA*. Manihot *Tournef.* 438. *Dill. elth.* 173. Jussievia *Houst.* A.A.

**Masculi Flores.*

CAL. *Perianthium* vix manifestum.

COR. monopetala, hypocrateriformis. *Tubus* brevissimus. *Limbus* quinquepartitus; *laciniis* subrotundis, patentibus, convexis, subtus concavis.

STAM. *Filamenta* decem, subulata, in medio approximata, quinque alterna breviora, erecta, corolla breviora. *Antherae* subrotundae, versatiles.

PIST. *Rudimentum* debile in fundo floris latet.

**Feminei Flores* in eadem umbella cum masculis.

CAL. nullus.

COR. pentapetala, rosacea.

PIST. Germen subrotundum, trisulcatum. *Styli* tres, dichotomi. *Stigmata* simplicia.

PER. *Capsula* subrotunda, tricocca, trilocularis: *loculis* bivalvibus.

SEM. solitaria, subrotunda.

OBS. J. Urens *Stamina novem, erecta, quorum Tria interiora reliquis longiora, quibus (tribus) setae totidem respondent, singulae singulo filamento prope basin insertae.*

In the 6th edition of the Genera Plantarum (No. 1084, p. 503.1764) Linnaeus added the following:

Nonnullae species in floribus Masculis habent Calycem quinquefidum & Corollam pentapetalam l. 3.

The species given by Linnaeus in the first edition of the Species Plantarum (p. 1006–7.1753) in order were (1) *gossypifolia*, (2) *moluccana*, (3) *Curcas*, (4) *multifida*, (5) *Manihot*, (6) *urens*, (7) *herbacea*. Tournefort's plate 438 cited by Linnaeus in his generic description was not referred to by him in the Hortus Cliffortianus (p. 445), nor was it referred to by him in the Species Plantarum (p. 1006–7), although the synonymy given by Tournefort (p. 658) was given by him and he based his *Jatropha Manihot* on it.

In the second edition of the Species Plantarum (p. 1428–1430.1763) Linnaeus divided these seven species into two groups, the first containing four species which he called the 'calyculati' and the second with three species which he called the 'acalyculati.'

A comparison of the Linnaean generic description with the seven species given by him developed the interesting fact that only one of these species agrees with his generic description.

His description calling for but one well-developed floral envelope was evidently based on the first plate (Tournefort 438) cited by him, to which it entirely applies. When he added his reference to Dillenius he did not modify his generic description to properly include the plant of Dillenius, although the plate cited is of a plant with two floral envelopes very well developed.

In 1763 he definitely noted that his first four species had two floral envelopes, but he never enlarged his generic description to properly embrace these species.

He always appreciated that *Jatropha urens* and the plant of Houston, his last two species, did not entirely accord with his generic description, and he drew attention to this several times.

In other words the original generic description of Linnaeus was based solely on *Jatropha Manihot* L. and it is the only one of his seven species which agrees with his generic description. It in consequence must be taken as the type of the genus.

INDEX TO AMERICAN BOTANICAL LITERATURE
1928-1929

The aim of this Index is to include all current botanical literature written by Americans, published in America, or based upon American material; the word America being used in the broadest sense.

This index is reprinted monthly on cards, and furnished in this form to subscribers at the rate of three cents for each card. Selections of cards are not permitted; each subscriber must take all cards published during the term of his subscription. Correspondence relating to the Index may be addressed to the Treasurer of the Torrey Club.

Arthur, J. C. Another fern rust of the genus *Desmella*. Mycologia **21**: 77–78. *f. 1.* 1 Mr 1929.

Ashby, S. F. The bacterial wilt of bananas and plantains. Agr. Jour. Brit. Guiana **1**: 217–220. *pl. 11–14.* D 1928.

Bade, E. The fir: its cultivation and its enemies. Gard. Chron. Am. **33**: 44–45. *illust.* 10 F 1929.

Baldwin, I. L., and Fred, E. B. Nomenclature of the root-nodule bacteria of the Leguminosae. Jour. Bacter. **17**: 141–150. F 1929.

Barber, C. A. Indian canes, classification and origin. Tropical Agr. **5**: 320–322. D 1928.

Bartholomew, E. Handbook of the North American Uredinales (Rust flora) including citations and synonymy. 1–193. Stockton, Kan., 1928.

Becker, W. A new violet from Colombia. Proc. Biol. Soc. Washington **41**: 151–152. 15 O 1928.

Bemis, E. W. *Aquilegia canadensis*, forma *Phippenii* in Worcester County, Massachusetts. Rhodora **31**: 36. 27 F 1929.

Benedict, D. M. *Ustilago echinata* Schroet. Mycologia **21**: 84–85. *f. 1.* 1 Mr 1929.

Berry, E. W. An *Anacardium* in the Lower Eocene of Texas. Jour. Washington Acad. Sci. **19**: 37–39. *f. 1.* 19 Ja 1929.
Anacardium kirni sp. nov.

Berry, E. W. The genus *Amygdalus* in North America. Jour. Washington Acad. Sci. **19**: 41–43. *f. 1.* 19 Ja 1929.
Describes *Amygdalus Alexanderi* sp. nov.

Berry, E. W. Seeds of a new species of Vitaceae from the Wilcox Eocene of Texas. Jour. Washington Acad. Sci. **19**: 39–41. *f. 1.* 19 Ja 1929.
Ampelocissites lytlensis gen. et sp. nov.

Black, L. M. A new and striking abnormality in potato plants. Phytopathology **19**: 175–176. F 1929.

Blake, S. F. *Cladonia floridana* in New Jersey. Rhodora **31**: 56. 1 Mr 1929.

Bödeker, F. Zwei neue Echinocacteen. Zeits. Sukkul. **3**: 362–364. *pl. 8., illust.* 15 D 1928.
Echinocactus Sauerii and *E. Roseanus* spp. nov. from Mexico.

Bowen, R. H. The use of osmic-impregnation methods in plant cytology. Bull. Torrey Club **56**: 33–52. *pl. 1.* "Ja" 22 F 1929.

Brand, A. Decas specierum novarum octava. Repert. Spec. Nov. **25**: 210–214. 31 D 1928.
Several American species are described.

Brown, H. J. The algal family Vaucheriaceae. Trans. Am. Microsc. Soc. **48**: 86–117. *pl. 15–20.* Ja 1929.

Buller, A. H. R. The plants of Canada past and present. Trans. Roy. Soc. Canada III. **22**: appendix A xxxiii–lviii. 1928.

Burret, M. Eine neue *Copernicia*-Art aus Paraguay. Notizbl. Bot. Gart. Berlin **10**: 402–404. 1D 1928.

Burret, M. Die Palmengattungen *Chelyocarpus* Dammer und *Tessmanniophoenix* Burret nov. gen. Notizbl. Bot. Gart. Berlin **10**: 394–401. 1 D 1928.
From Peru.

Burret, M. Die Palmengattung *Manicaria* Gaertn. Notizbl. Bot. Gart. Berlin **10**: 389–394. 1 D 1928.

Carlson, M. C. Michrochemical studies of rooting and non-rooting rose cuttings. Bot. Gaz. **87**: 64–80. *f. 1–6.* 9 F 1929.

Carlson, M. C. Origin of adventitious roots in *Coleus* cuttings. Bot. Gaz. **87**: 119–126. *pl. 5, 6.* 9 F 1929.

Castellanos, A. Algunos árboles y arbustos de interés floristico regional. Physis **9**: 98–101. *illust.* 10 Au 1928.
Opuntia puelchana n. sp. is described.

Christensen, J. J. The influence of temperature on the frequency of mutation in *Helminthosporium sativum*. Phytopathology **19**: 155–162. *f. 1–4.* F 1929.

Clark, L., & Frye, T. C. The liverworts of the northwest. Publ. Puget Sound Biol. Sta. **6**: 1–194. *illust.* 15 D 1928.

Collins, J. F. Notes on certain species of *Panicum* occurring in or near Rhode Island. Rhodora **30**: 229–232. "D 1928" 24 Ja 1929.

Cook, M. T. Tres enfermedades de la caña de Azucar encontradas recientemente en Puerto Rico. Rev. Agr. Puerto Rico **22**: 15–16, 39. Ja 1929.

Cormack, M. Trees and shrubs of Roger Williams Park. 1–49. *f. 1–38.* Providence, R. I., 1928.

Coville, P. Some aspects of forest genetics. Jour. Forestry **26**: 977–993. D 1928.

Denny, F. E. Rôle of mother tuber in growth of potato plant. Bot. Gaz. **87**: 157–194. *f. 1–5.* 9 F 1929.

Dixon, H. N. Mosses collected in north China, Mongolia and Tibet, by Rev. Père E. Licent. Rev. Bryol. II. **1**: 177–191. *f. 1–6.* 1928.

Dobbie, H. B. The propagation of ferns. Am. Fern Jour. **19**: 19–24. *f. 1, 2.* Ja 1929.

Drayton, F. L. Recommendations for the control of *Gladiolus* diseases. Gladiolus Rev. **6**: 11–12. Ja 1929.

Drechsler, C. Zonate eyespot of grasses caused by *Helminthosporium giganteum*. Jour. Agr. Res. **37**: 473–492. *pl. 1–8* + *f. 1–3.* "15 O" N 1928.

Eaton, F. M., & Belden, G. O. Leaf temperatures of cotton and their relation to transpiration, varietal differences, and yields. U. S. Dept. Agr. Tech. Bull. 91: 1–39. *f. 1–10.* Ja 1929.

Eaton, R. J. *Hydrangea paniculata* naturalized in Massachusetts. Rhodora **31**: 18–19. 31 Ja 1929.

Elliott, C., & Smith, E. F. A bacterial stripe disease of sorghum. Jour. Agr. Res. **38**: 1–22. *pl. 1–9.* "1 Ja" F 1929.

Ewer, S. F. A teratological flower of *Corallorrhiza maculata*. Rhodora **31**: 53. Mr 1929.

Eyster, W. H. Five new genes in chromosome I in maize. Zeits. Induk. Abst. und Vererb. **49**: 105–130. *f. 1, 2.* 1929.

Farwell, O. A. Contributions to the botany of Michigan No. 16. Miscellany. Am. Midl. Nat. **11**: 261–269. Ja 1929.

Fernald, M. L. A hybrid *Rhynchospora*. Rhodora **31**: 38. 1 Mr 1929.

Fernald, M. L. *Roripa islandica* an invalid name. Rhodora **31**: 17–18. 31 Ja 1929.

Fernald, M. L., & Weatherby, C. A. Contributions from the Gray Herbarium of Harvard University—No. LXXXIII. 1. Schmidel's publication of *Thelypteris*. Rhodora **31**:

21–26. *pl. 179*; II. A study of *Thelypteris palustris*. 27–36. *pl. 180*. 27 F 1929; III. Four grasses of eastern America. 44–49. *f. 1*. 1 Mr 1929.

Fraser, W. P., & Ledingham, G. A. Studies on the sedge rust, *Puccinia Caricis-Shepherdiae*. Mycologia **21**: 86–89. *pl. 10*. 1 Mr 1929.

Garnett, C. S. Orchidological research and collecting expedition, Brazil, 1928. Orchid Rev. **37**: 40–49. F 1929.

Gilbert, A. H. Net-necrosis of Irish potato tubers. Vermont Agr. Exp. Sta. Bull. 289: 1–36. *pl. 1–12+f. 1–7*. S 1928.

Gladwin, F. E. Downy and powdery mildews of the grape and their control. Geneva, N. Y. Agr. Exp. Sta. Bull. 560: 1–14. *f. 1–3*. D 1928.

Guilliermond, A. The recent development of our idea of the vacuome of plant cells. Am. Jour. Bot. **16**: 1–22. *f. 1–16*. "Ja" 12 F 1929.

Hart, H. T. Delayed germination in seeds of *Peltandra virginica* and *Celastrus scandens*. Publ. Puget Sound Biol. Sta. **6**: 255–261. 28 D 1928.

Hartge, L. A. *Nereocystis*. Publ. Puget Sound Biol. Sta. **6**: 207–236. *f. 1–72*. 28 D 1928.

Hartley, C., & Haasis, F. W. Brooming disease of black locust. (*Robinia pseudacacia*). Phytopathology **19**: 163–166. *f. 1, 2*. F 1929.

Hilend, M. A revision of the genus *Zauschneria*. Am. Jour. Bot. **16**: 58–68. "Ja" 12 F 1929.

Hoggan, I. A. The peach aphid (*Myzus persicae* Sulz.) as an agent in virus transmission. Phytopathology **19**: 109–123. *pl. 1–2+f. 1*. F 1929.

Holm, T. The application of the term "rhizome." Rhodora **31**: 6–17. *pl. 177, 178*. 31 Ja 1929.

Holmes, F. O. Inoculating methods in tobacco mosaic studies. Bot. Gaz. **87**: 56–63. *f. 1–4*. 9 F 1929.

Holmes, F. O. Local lesions in tobacco mosaic. Bot. Gaz. **87**: 39–55. *f. 1–11*. 9 F 1929.

Howe, M. A. New York's first Botanical Garden. Jour. N. Y. Bot. Gard. **30**: 49–58. *f. 1, 2*. Mr 1929.

Jaques, H. E., & others. The trees of Mt. Pleasant and vicinity. 1–105. *illust*. 1929.
Mimeograph copy.

Johann, H., Holbert, J. R., & Dickson, J. G. A *Pythium* seedling blight and root rot of Dent corn. Jour. Agr. Res. **37**: 443–464. *f. 1–9.* "15 O" N 1928.

Jones, D. F. Selective fertilization. i–xii, 1–163. *f. 1–21.* Chicago, Univ. Chicago Press, Mr 1928.

Joseph, H. C. Germination and keeping quality of parsnip seeds under various conditions. Bot. Gaz. **87**: 195–210. *f. 1, 2.* 9 F 1929.

Joseph, H. C. Germination and vitality of birch seeds. Bot. Gaz. **87**: 127–151. *f. 1–5.* 9 F 1929.

Kearney, T. H. Plants of lower Californian relationship in central Arizona. Jour. Washington Acad. Sci. **19**: 70–71. 4 F 1929.

Kearney, T. H., & Harrison, G. J. Variation in seed fuzziness on individual plants of Pima cotton. Jour. Agr. Res. **37**: 465–472. *f. 1–4.* "15 O" N 1928.

Knowlton, C. H. Index to the flora of the Boston district. Rhodora **31**: 41–43. Mr 1929.

Kuhlmann, J. G., & Sampaio, A. J. de. *Clinostemon*, Kuhlm. et A. Samp. n. gen. de Lauraceas, da Amazonia. Bol. Mus. Nac. Rio de Janeiro **4**[2]: 57–59. *illust.* 1928.

Lambert, E. B. The relation of weather to the development of stem rust in the Mississippi valley. Phytopathology **19**: 1–71. *f. 1–11.* Ja 1929.

Laufer, B. The American plant migration. Sci. Monthly **28**: 239–251. Mr 1929.

Lindstrom, E. W. A haploid mutant in the tomato. Jour. Heredity **20**: 23–30. *f. 11–15.* Ja 1929.

Long, F. L. Stomata which show functional movement for a century. Science II **69**: 218–219. 22 F 1929.

Macbride, J. F. A new *Miconia* and other large Melastomes of Peru. Tropical Woods **17**: 12–14. 1 Mr 1929.

Mackenzie, K. K. Concerning the proper identification of Linnaean species, especially those based on material collected by Clayton. Rhodora **30**: 232–237. "D 1928" 24 Ja 1929.

Mackenzie, K. K. Some Juncus names. Bull. Torrey Club **56**: 25–32. "Ja" 22 F 1929.

Melhus, I. E., Reddy, C. S., Henderson, W. J., & Vestal, E. A new virus disease epidemic on onions. Phytopathology **19**: 73–77. *f. 1.* Ja 1929.

Metcalf, M. M. Parasites and the aid they give in problems of taxonomy, geographical distribution and paleogeography. Smithsonian Misc. Coll. **81**[8]: 1–36. *f. 1–4.* 28 F 1929.

Mildbraed, J. Neue Arten von *Coussapoa* und *Pourouma* Aubl. Notizbl. Bot. Gart. Berlin **10**: 413–420. 1 D 1928.
Describes 6 new species from South America.

Molfino, J. F. Notas botanicas—6. Physis **9**: 77–93. *illust.* 10 Au 1928.

Molisch, H. The movement of sap in plants. Science II. **69**: 217–218. 22 F 1929.

[Moore, G. T.] A winter-flowering shrub native to Missouri (*Hamamelis vernalis*). Missouri Bot. Gard. Bull. **17**: 30–32. *pl. 8, 9.* F 1929.

Morrison, B. Y. The yellow day lilies. U. S. Dept. Agr. Circ. 42: 1–13. *f. 1–4.* N 1928.

Moss, E. H. The uredinia of *Melampsora* and *Coleosporium*. Mycologia **21**: 79–83. *f. 1, 2.* 1 Mr 1929.

Mousley, H. Further notes on *Amesia* (*Epipactis*) *latifolia* in Canada. Orchid Rev. **37**: 50–52. *illust.* F. 1929.

Mousley, H. Further notes on *Malaxis brachypoda* (Monophyllos) and *M. uniflora* forma *bifolia*. Orchid Rev. **37**: 37–39. *illust.* F 1929.

Ogilvie, L. The Bermuda Easter lily. Roy. Soc. London Quart. Sum. **39**: 4–6. *illust.* Ja 1929.

Ogilvie, L. A transmissible virus disease of the Easter lily. Ann. Applied Biol. **15**: 540–562. *pl. 30–33.* N 1928.

Palmer, T. C. *Isoetes Lechleri* Mett. Am. Fern Jour. **19**: 17–19. Ja 1929.

Papp, C. Berichtigung zu: Papp, Formen von *Melica* usw. Notizbl. Bot. Gart. Berlin **10**: 412. 1 D 1928.

Parodi, L. R. Notas sobre Gramineas de la flora Argentina. Physis **9**: 12–45. *f. 1–9.* 10 Au 1928.

Pease, A. S. A day in Gaspé. Rhodora **31**: 54–56. 1 Mr 1929.

Pennell, F. W. A new *Maurandya* from Arizona. Jour. Washington Acad. Sci. **19**: 69–70. 4 F 1929.
Maurandya acerifolia, n. sp.

Perkins, J. Drei neue Arten der Gattung *Styrax*. Notizbl. Bot. Gart. Berlin **10**: 457–459. 1 D 1928.
South American plants.

Pittier, H. Arboles y arbustos del orden de las Leguminosas—I. Mimosaceas. 1–82. 1927; II. Cesalpiniaceas. 83–148. 1928; III. Papilionaceas. 149–229. 1928.
Ext. from Bol. Min. de Rel. Exter.

Pittier, H. Viaje de estudio a Costa Rica notas y reflexiones sobre agricultura recogidas. Rev. Agr. Puerto Rico **22**: 3–14. Ja 1929.

Record, S. J. Trees and shrubs collected by F. C. Englesing in northeastern Nicaragua. Tropical Woods **17**: 18–38. 1 Mr 1929.

Reiche, C. Lecturas biologicas una introducion a la ecologia de los organismos. Mem. Rev. Soc. Cien. "Antonio Alzate" 47: 1–327. 1928.

Reid, M. E. Growth of seedlings in light and in darkness in relation to available nitrogen and carbon. Bot. Gaz. **87**: 81–118. *pl. 1–4*. 9 F 1929.

Reimers, H. Beiträge zur Kenntnis der südamerikanischen Gentianaceen. Bot. Jahrb. **62**: 321–337. 1928.
Describes new species in *Gentiana* (6) and *Halenia* (1).

Richards, B. L. White-spot of alfalfa and its relation to irrigation. Phytopathology **19**: 125–141. *f. 1–10*. F 1929.

Rigg, G. B., & Cain, R. A. A physico-chemical study of the leaves of three medicinal plants in relation to evergreenness. Am. Jour. Bot. **16**: 40–57. *f. 1–9*. "Ja" 12 F 1929.

Rosen, H. R., & Groves, A. B. Studies on fire blight: host range. Jour. Agr. Res. **37**: 493–505. *f. 1–5*. "15 O" N 1928.

Rydberg, P. A. Genera of North American Fabaceae—V. *Astragalus* and related genera. Am. Jour. Bot. **15**: 584–595. *pl. 44, 45*. "D 1928" 10 Ja 1929.

Rydberg, P. A. (Rosales) Fabaceae Galegeae (pars). North Am. Flora **24**: 251–314. 19 F 1929.
Includes descriptions of *Gynophoraria*, *Lonchophaca* and *Batidophaca*, gen nov., and of eight new species.

Schaffner, J. H. Heredity and sex. Ohio Jour. Sci. **29**: 1–26. "Ja" 12 F 1929.

Schaffner, J. H. The occurrence of three and four-angled branches in *Equisetum arvense*. Am. Fern Jour. **19**: 24–26. Ja 1929.

Schulz, E. D. Texas wild flowers. i–xi, 1–505. *illust.* Chicago, Laidlaw Bros., 1928.

Shippy, W. B. An inexpensive and quickly made instrument for testing relative humidity. Bot. Gaz. **87**: 152–156. *f. 1–3.* 9 F 1929.

Skutch, A. F. The capture of prey by the bladderwort. A review of the physiology of the bladders. New Phytol. **27**: 261–297. *pl. 9+f. 1, 2.* 31 D 1928.

Small, J. K. Peninsula Delmarva. Jour. N. Y. Bot. Gard. **30**: 62–71. *f. 3–6.* Mr 1929.

Smith, L. B. A new form of *Erythronium americanum.* Rhodora **31**: 36. 27 F 1929.

Smith, W. K., & Harrington, J. B. Wheat albinos. Jour. Heredity **20**: 19–22. *f. 10.* Ja 1929.

Sorokin, H., & Sommer, A. L. Changes in the cells and tissues of root tips induced by the absence of calcium. Am. Jour. Bot. **16**: 23–39. *pl. 1–3.* "Ja" 12 F 1929.

Soth, Mrs. M. E. Variable plant forms. Am. Bot. **35**: 5–7. Ja 1929.

Sparrow, F. K., Jr. A note on the occurrence of two rotifer-capturing Phycomycetes. Mycologia **21**: 90–96. *f. 1.* 1 Mr 1929.

Stamm, A. J. The capillary structure of softwoods. Jour. Agr. Res. **38**: 23–67. *f. 1–10.* "1 Ja" Mr 1929.

Standley, P. C. A new *Brosimum* from Panama, with notes on the generic names *Brosimum* and *Ferolia.* Tropical Woods **17**: 8–11. 1 Mr 1929.

Standley, P. C. Two new plants from Illinois. Rhodora **31**: 36–38. 27 F 1929.

Nuphar advena brevifolia and × *Liatris Ridgwayi.*

Stanton, T. R., & Coffman, F. A. Yellow-kerneled fatuoid oats. Jour. Heredity **20**: 67–70. *f. 3, 4.* F 1929.

Steil, W. N., & Fuller, A. M. Ferns and fern allies in Wisconsin. Am. Fern Jour. **18**: 105–114. *f. 9, 10.* 4 D 1928; II. Am. Fern Jour. **19**: 1–10. Ja 1929.

Stevens, O. A. Wildflowers from northeastern Kansas. Am. Bot. **35**: 1–5. *illust.* Ja 1929.

St. John, H. Notes on northwestern ferns. Am. Fern Jour. **19**: 11–16. Ja 1929.

St. John, H., & others. New and noteworthy northwestern plants. Part I. Proc. Biol. Soc. Washington **41**: 191–200. 15 O 1928.

St. John, H., & Warren, F. A. The crinite headed Hieraciums of the northwest. Proc. Biol. Soc. Washington **41**: 107–110. 29 Je 1928.

Stout, A. B. The clon in plant life. Jour. N. Y. Bot. Gard. **30**: 25–37. *f. 1–8.* F 1929.

Stout, A. B. New daylilies for the garden. House & Garden **55**: 88–89, 124, 126, 134. *illust.* Ja 1929.

Swingle. W. T., Robinson, T. R., & May, E. The nurse-grafted y-cutting method of plant propagation. Jour. Heredity **20**: 79–94. *f. 9–14.* F 1929.

Taubenhaus, J. J., Ezekiel, W. N., & Rea, H. E. A new cotton wilt. Phytopathology **19**: 171–173. *f.* 1. F 1929.

Taubenhaus, J. J., & others. A method of inoculation for *Phymatotrichum* root rot investigations. Phytopathology **19**: 167–170. *f. 1.* F 1929.

Taylor, N. The vegetation of the Allegany State Park. N. Y. Handbook 5: 1–126. *f. 1–25.* 1928.

Theriot, I. *Jaffueliobryum* gen. nov. Rev. Bryol **55**: 192–195. *pl. 8.* 1928.

Describes *Jaffueliobryum marginatum* from Bolivia.

Thompson, S. L. Migration of western plants to Toronto region. Canadian Field Nat. **43**: 30. 1 F 1929.

Tiffany, L. H. The algal genus *Bulbochaete.* Trans. Am. Micros. Soc. **47**: 121–176. *pl. 14–23.* Ap 1928.

Tiffany, L. H. Some economic aspects of the algae. School Sci. & Math. **28**: 581–593. *f. 1–4.* Je 1928.

Trelease, W. Two additional species of *Trianaeopiper.* Proc. Am. Philos. Soc. **67**: 335–338. *illust.* 1928.

Tu, C. Physiologic specialization in *Fusarium* spp. causing headblight of small grains. Phytopathology **19**: 143–154. *f. 1–3.* F 1929.

Tucker, C. M. Enfermedades del Café en América. Rev. Agr. Puerto Rico **22**: 27–31. Ja 1929.

Uphof, J. C. T. Beiträge zur Kenntnis der Burmanniacee *Apteria aphylla* (Nutt.) Barnhart. Österreich. Bot. Zeit. **78**: 71–80. *pl. 1, 2.* 31 Ja 1929.

Vinson, C. G., & Petre, A. W. Mosaic disease of tobacco. Bot. Gaz. **87**: 14–38. 9 F 1929.

Wells, F. C. Rust in snapdragons. Gard. Chron. Am. **33**: 20. Ja 1929.

West, J. Cacti. Better Flowers **9**: 6, 24–25. F 1929.

Weston, W. H., Jr. Observations on *Loramyces*, an undescribed aquatic Ascomycete. Mycologia **21**: 55–76. *pl. 8, 9.* 1 Mr 1929.

Whetzel, H. H. Cultures of sclerotial fungi. Phytopathology **19**: 176. F 1929.

Wilson, E. H. Leaves from a plant hunter's notebook. I. Mrs. Thayer's lily. Horticulture **7**: 51. *illust.* 1 F 1929; II. *Primula calciphila.* 76. *illust.* 15 F 1929.

Wittrock, G. L. New combinations in the genus *Agoseris*. Publ. Puget Sound Biol. Sta. **6**: 253–254. 28 D 1928.

Wormald, H. Further studies on the brown-rot fungi—III. Nomenclature of the American brown-rot fungi: a review of literature and critical remarks. Trans. British Myc. Soc. **13**: 194–204. 26 O 1928.

Young, P. A., Jellison, W. L., & Morris, H. E. *Plasmopara* mildew of sunflower. Science II. **69**: 254. 1 Mr 1929.

Zimmerman, P. W., & Hitchcock, A. E. Root formation and flowering of *Dahlia* cuttings when subject to different day lengths. Bot. Gaz. **87**: 1–13. *f. 1–6.* 9 F 1929.